

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: David H. LeRoy Examiner #: 62735 Date: 12-9-02
Art Unit: 1742 Phone Number 305-5793 Serial Number: 10/046158
Mail Box and Bldg/Room Location: CP3-7B26 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): Hiroki Ota, Takumi Ujio
Junichiro Hiragawa, Osamu Furukimi

Earliest Priority Filing Date: 1/16/01

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

0.0015 - 0.02 %C
0.0015 - 0.02 %N
0.1 - 1.0 %Si
0.1 - 3.0 %Mn
5 > 10 %Cr
0.01 - 3.0 %Ni
≤ 0.1 %Al
≤ 0.05 %P
≤ 0.03 %S
0.01 - 1.0 %Co
Bal Fe

may also include
0.01 - 0.5 %V
0.001 - 0.05 %W
≤ 3.0 %Cu
or
≤ 3.0 %Mo

STAFF USE ONLY

Type of Search

Vendors and cost where applicable

Searcher: EL NA Sequence (#) _____ STN _____
Searcher Phone #: _____ AA Sequence (#) _____
Searcher Location: _____ Structure (#) (4) (Subjects)
Date Searcher Picked Up: _____ Bibliographic (and) Questel/Orbit
Date Completed: 12-13-02 Litigation _____ Dr. Link _____
Searcher Prep & Review Time: 5 Fulltext _____ Lexis/Nexis _____
Clerical Prep Time: _____ Patent Family _____ Sequence Systems _____
Online Time: 70 Other _____ WWW/Internet _____
Other (specify) _____

1/16/02
1/16/01

El	1	2	3 on 2	4 on 1	5 on 2	6 on 3	7 on 1	8 on 2	9 on 3	10 on 4
C	0.0015-0.02	"	"	"	"	"	"	"	"	"
N	0.0015-0.02	"	"	"	"	"	"	"	"	"
Si	0.1-1.0	"	"	"	"	"	"	"	"	"
Mn	0.1-3.0	"	"	"	"	"	"	"	"	"
Cr	5<Cr<10	"	5<Cr<7.5	"	"	5<Cr<7.5	"	"	5<Cr<7.5	"
Ni	0.01-3.0	"	"	"	"	"	"	"	"	"
Al	Al<0.1	"	"	"	"	"	"	"	"	"
P	P<0.05	"	"	"	"	"	"	"	"	"
S	S<0.03	"	"	"	"	"	"	"	"	"
Co	0.01-1.0	"	"	"	"	"	"	"	"	"
Fe	Bal +Imp	"	"	"	"	"	"	"	"	"
V	xxx	0.01-0.5	0.01-0.5	xxx	0.01-0.05	0.01-0.5	xxx	0.01-0.05	0.01-0.05	xxx
W	xxx	0.05	0.005-0.03	xxx	0.001-0.05	0.001-0.05	xxx	0.001-0.05	0.001-0.05	xxx
Cu	xxx	xxx	xxx	Cu<=3.0	Cu<=3.0	Cu<=3.0	xxx	xxx	xxx	Cu<=3.0
Mo	xxx	xxx	xxx	Mo<=3.0	Mo<=3.0	Mo<=3.0	xxx	xxx	xxx	Mo<=3.0
B	xxx	xxx	xxx	xxx	xxx	xxx	0.0002-0.0030	0.0002-0.0030	0.0002-0.0030	0.0002-0.0030

=> file reg

FILE 'REGISTRY' ENTERED AT 20:20:11 ON 13 DEC 2002
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Property values tagged with IC are from the ZIC/VINITI data file
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STRUCTURE FILE UPDATES: 12 DEC 2002 HIGHEST RN 476148-76-2
DICTIONARY FILE UPDATES: 12 DEC 2002 HIGHEST RN 476148-76-2

TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP
PROPERTIES for more information. See STNote 27, Searching Properties
in the CAS Registry File, for complete details:

<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> d his

(FILE 'HOME' ENTERED AT 18:20:57 ON 13 DEC 2002)

FILE 'HCAPLUS' ENTERED AT 18:22:07 ON 13 DEC 2002

L1 11895 S OTA ?/AU
L2 32 S UJIRO ?/AU
L3 0 S HIRAGAWA ?/AU
L4 292 S FURUKIMI ?/AU
L5 2460 S HIRASAWA ?/AU
L6 0 S L1 AND L2 AND L4 AND L5
L7 4 S L2 AND (L1 OR L4 OR L5)
SEL L7 1-4 RN

FILE 'REGISTRY' ENTERED AT 18:26:57 ON 13 DEC 2002

L8 93 S E1-E93
L9 218296 S 77-100 FE/MAC
L10 90 S L8 AND L9

FILE 'HCAPLUS' ENTERED AT 18:29:27 ON 13 DEC 2002

L11 202 S L10

FILE 'LCA' ENTERED AT 18:30:14 ON 13 DEC 2002

FILE 'HCAPLUS' ENTERED AT 18:35:13 ON 13 DEC 2002

L12 7161 S FERRIT?(5A)STAINLESS?(5A)STEEL?
L13 182294 S WELD? OR BRAZ? OR ARCWELD? OR SOLDER?
L14 39029 S METALWORK? OR WORKABIL? OR WORKABL? OR METALCRAFT? OR M

L15 68855 S DUCTIL? OR MALEAB? OR FORMABIL? OR FORMABL?
L16 51 S L11 AND L12
L17 32 S L11 AND L13
L18 28 S L11 AND L14
L19 33 S L11 AND L15
L20 7 S L16 AND L17
L21 6 S L16 AND L18
L22 11 S L16 AND L19
L23 5 S L17 AND L18
L24 6 S L17 AND L19
L25 10 S L18 AND L19
L26 31 S L20-L25

FILE 'REGISTRY' ENTERED AT 18:39:58 ON 13 DEC 2002

L27 10248 S L9 AND 0.0015-0.02 C/MAC
L28 19005 S L9 AND 5-10 CR/MAC
L29 1807 S L9 AND 0.0015-0.02 N/MAC
L30 123681 S L9 AND 0.10-1.0 SI/MAC
L31 163234 S L9 AND 0.10-3.0 MN/MAC
L32 65277 S L9 AND 0.01-3.0 NI/MAC
L33 16877 S L9 AND 0-0.10 AL/MAC
L34 7737 S L9 AND 0-0.05 P/MAC
L35 5794 S L9 AND 0-0.03 S/MAC
L36 4128 S L9 AND 0.01-1.0 CO/MAC
L37 36381 S L9 AND 0.01-0.50 V/MAC
L38 1390 S L9 AND 0.001-0.05 W/MAC
L39 47804 S L9 AND 0-3.0 CU/MAC
L40 74333 S L9 AND 0-3.0 MO/MAC
L41 333 S L27 AND L28 AND L29
L42 198 S L41 AND L30 AND L31 AND L32
L43 48 S L42 AND L36
L44 6 S L43 AND L33
L45 0 S L43 AND L34
L46 0 S L43 AND L35
L47 11 S L42 AND L34
L48 15 S L42 AND L35
L49 46 S L43 AND L37
L50 11 S L43 AND L38
L51 23 S L43 AND L39
L52 46 S L43 AND L40
L53 44 S L49 AND L52
L54 21 S L53 AND L51

FILE 'HCAPLUS' ENTERED AT 19:03:42 ON 13 DEC 2002

L55 5 S L44
L56 11 S L50
L57 20 S L54
L58 9 S L47
L59 12 S L48
L60 6 S (L58 OR L59) AND (L12 OR L13 OR L14 OR L15)
L61 41 S L43
L62 4 S L61 AND L12

L63 14 S L61 AND L13
L64 1 S L61 AND L14
L65 1 S L61 AND L15
L66 13 S L55 OR L60 OR L62 OR L64 OR L65
L67 18 S (L56 OR L63) NOT L66
L68 3 S L57 NOT (L66 OR L67)
L69 21 S (L56 OR L63 OR L57) NOT L66
L70 31 S L26 NOT (L66 OR L69)

FILE 'REGISTRY' ENTERED AT 19:15:34 ON 13 DEC 2002

FILE 'HCAPLUS' ENTERED AT 19:16:42 ON 13 DEC 2002

L71 436 S L41
L72 34 S L71 AND L12
L73 93 S L71 AND L13
L74 23 S L71 AND L14
L75 30 S L71 AND L15
L76 0 S L72 AND L73 AND L74 AND L75
L77 1 S L70 AND (L72 OR L73 OR L74 OR L75)
L78 1 S L26 AND L71
L79 4 S L72 AND L73
L80 4 S L72 AND L74
L81 7 S L72 AND L75
L82 3 S L73 AND L74
L83 5 S L73 AND L75
L84 5 S L74 AND L75
L85 20 S (L77-L84) NOT (L66 OR L69)

FILE 'REGISTRY' ENTERED AT 20:20:11 ON 13 DEC 2002

=> file hcaplus

FILE 'HCAPLUS' ENTERED AT 20:21:22 ON 13 DEC 2002

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FILE COVERS 1907 - 13 Dec 2002 VOL 137 ISS 25

FILE LAST UPDATED: 12 Dec 2002 (20021212/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

=> d 166 1-13 cbib abs hitstr hitind

X L66 ANSWER 1 OF 13 HCAPLUS COPYRIGHT 2002 ACS

2002:864318 Document No. 137:356076 Tool-steel permanent molds for casting of nonferrous metal or alloy articles. Sera, Tomoaki; Umino, Masahide; Kondo, Kunio (Sumitomo Metal Industries Ltd., Japan). U.S. US 6479013 B1 20021112, 9 pp. (English). CODEN: USXXAM. APPLICATION: US 2000-635620 20000810.

AB The tool steel for corrosion-resistant permanent molds or cores contains C 0.05-0.2, Si 0.10-1.5, Mn 0.1-1.5, Cr 7.0-15, Ni .ltoreq.2.0, Cu .ltoreq.2.0, Mo .ltoreq.1.0, W .ltoreq.3.0, V 0.05-1.5, Nb .ltoreq.0.5, Al .ltoreq.0.1, N .ltoreq.0.1, B .ltoreq.0.02, Ti .ltoreq.0.05, and S .ltoreq.0.015%. The alternate tool steel contains C 0.05-0.4, Si 0.10-1.5, Mn 0.1-1.5, Cr 7.0-15, Ni .ltoreq.2.0, Co 1-10, Cu .ltoreq.2.0, Mo 3.0-7.0, W .ltoreq.3.0, V 0.05-1.5, Nb .ltoreq.0.5, Al .ltoreq.0.1, N .ltoreq.0.1, B .ltoreq.0.02, Ti .ltoreq.0.05, and S .ltoreq.0.015%. The tool-steel mold assembly parts show increased resistance to corrosion, oxidn., heat softening, and distortion in pressure casting of nonferrous metals or alloys. The permanent molds have protective Cr oxide layer formed during the casting stage to increase the mold service life. The permanent molds, cores, and related parts are suitable for use in casting of Al, Mg, or Zn alloys. The typical tool steel contains C 0.13, Si 0.30, Mn 0.59, Cr 10.55, Ni 0.37, Cu 0.86, Mo 0.35, W 2.09, V 0.19, Nb 0.05, Al 0.009, N 0.0615, B 0.0025, Ti 0.002, Co 0.04, P 0.014, and S 0.001%.

IT 474451-89-3

(alloying of; tool-steel permanent molds and cores for casting of nonferrous metals or alloys)

RN 474451-89-3 HCAPLUS

CN Iron alloy, base, Fe 55-89, Cr 7-15, Co 1-10, Mo 3-7, W 0-3, Cu 0-2, Ni 0-2, Mn 0.1-1.5, Si 0.1-1.5, V 0-1.5, Nb 0-0.5, C 0-0.4, Al 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	55	-	89	7439-89-6
Cr	7	-	15	7440-47-3
Co	1	-	10	7440-48-4
Mo	3	-	7	7439-98-7
W	0	-	3	7440-33-7
Cu	0	-	2	7440-50-8
Ni	0	-	2	7440-02-0
Mn	0.1	-	1.5	7439-96-5
Si	0.1	-	1.5	7440-21-3

V	0	-	1.5	7440-62-2
Nb	0	-	0.5	7440-03-1
C	0	-	0.4	7440-44-0
Al	0	-	0.1	7429-90-5
N	0	-	0.1	17778-88-0

IC ICM C22C038-24
ICS C22C038-30; C22C038-22

NCL 420069000

CC 55-2 (Ferrous Metals and Alloys)

IT 474451-88-2 **474451-89-3**

(alloying of; tool-steel permanent molds and cores for casting of nonferrous metals or alloys)

L66 ANSWER 2 OF 13 HCAPLUS COPYRIGHT 2002 ACS

2002:777819 Document No. 137:297891 Steel sheets surface-treated with alkali-soluble lubricating film exhibiting excellent **formability** and excellent film removal property being stable for a long time and independent of temperature for drying film. Yamaoka, Ikuro; Kanai, Hiroshi; Miyasaka, Akihiro; Mori, Yoichiro; Tawa, Tsutomu; Nishimura, Mitsuhiro; Kouda, Chikako (Nippon Steel Corporation, Japan; Mitsui Takeda Chemicals, Inc.). PCT Int. Appl. WO 2002078949 A1 20021010, 55 pp. DESIGNATED STATES: W: CA, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2002-JP3232 20020329. PRIORITY: JP 2001-99311 20010330; JP 2001-99312 20010330; JP 2001-176681 20010612.

AB Steel sheets surface-treated with an alkali-sol. lubricating film, characterized in that one or both sides of the steel sheets are coated with an alkali-sol. lubricating film comprising, as main components, an aq. compn. contg. an alkali-sol. polyurethane having a polyether polyol as a skeleton and contg. a carboxyl group in the mol. thereof, and a lubricity-imparting agent in an amt. of 1-30% relative to the aq. compn. contg. an alkali-sol. polyurethane, in a film thickness of 0.5-10 .mu.m, and the film has a coeff. of elasticity of 0.5-20 GPa at 25.degree. after coating. The steel sheets exhibit excellent **formability** and excellent film removal property which is stable for a long time and independent of the temp. for drying the film. The steel sheets are used for fuel tank.

IT **403658-06-0 470467-17-5**

(steel sheets surface-treated with alkali-sol. polyurethane-based lubricating film exhibiting excellent **formability** and film removal property for fuel tanks)

RN 403658-06-0 HCAPLUS

CN Iron alloy, base, Fe 51-91, Cr 9-30, Al 0-5, Mn 0-5, Ni 0-5, Si 0-3, C 0-0.5, N 0-0.2, P 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	51 - 91	7439-89-6

Cr	9	-	30	7440-47-3
Al	0	-	5	7429-90-5
Mn	0	-	5	7439-96-5
Ni	0	-	5	7440-02-0
Si	0	-	3	7440-21-3
C	0	-	0.5	7440-44-0
N	0	-	0.2	17778-88-0
P	0	-	0.1	7723-14-0

RN 470467-17-5 HCAPLUS

CN Iron alloy, base, Fe 0-91, Mn 0-55, Cr 9-30, Mo 0-8, Al 0-5, Cu 0-5, Ni 0-5, W 0-5, Si 0-3, Nb 0-1, Ti 0-1, V 0-1, C 0-0.5, N 0-0.2, Ca 0-0.1, Mg 0-0.1, P 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	0 - 91	7439-89-6
Mn	0 - 55	7439-96-5
Cr	9 - 30	7440-47-3
Mo	0 - 8	7439-98-7
Al	0 - 5	7429-90-5
Cu	0 - 5	7440-50-8
Ni	0 - 5	7440-02-0
W	0 - 5	7440-33-7
Si	0 - 3	7440-21-3
Nb	0 - 1	7440-03-1
Ti	0 - 1	7440-32-6
V	0 - 1	7440-62-2
C	0 - 0.5	7440-44-0
N	0 - 0.2	17778-88-0
Ca	0 - 0.1	7440-70-2
Mg	0 - 0.1	7439-95-4
P	0 - 0.1	7723-14-0

IC ICM B32B015-08

ICS B05D007-14; C23C022-00

CC 55-6 (Ferrous Metals and Alloys)

Section cross-reference(s): 38

IT Hydrocarbons, uses

(fluoro, wax; steel sheets surface-treated with alkali-sol. polyurethane-based lubricating film exhibiting excellent **formability** and film removal property for fuel tanks)

IT Films

(lubricating; steel sheets surface-treated with alkali-sol. polyurethane-based lubricating film exhibiting excellent **formability** and film removal property for fuel tanks)

IT Fuel tanks

(steel sheets surface-treated with alkali-sol. polyurethane-based lubricating film exhibiting excellent **formability** and film removal property for fuel tanks)

IT Paraffin waxes, uses

Polyurethanes, uses

(steel sheets surface-treated with alkali-sol. polyurethane-based lubricating film exhibiting excellent **formability** and film removal property for fuel tanks)

IT Fluoropolymers, uses

Polyolefins

(wax; steel sheets surface-treated with alkali-sol. polyurethane-based lubricating film exhibiting excellent **formability** and film removal property for fuel tanks)

IT 11109-52-7, SUS430 12597-68-1, Stainless steel, processes

110218-32-1 112236-14-3 185750-12-3 403658-05-9

403658-06-0 403658-07-1 403658-08-2 403658-09-3

403658-10-6 470467-15-3 470467-16-4 **470467-17-5**

470467-18-6

(steel sheets surface-treated with alkali-sol. polyurethane-based lubricating film exhibiting excellent **formability** and film removal property for fuel tanks)

IT 1592-23-0, Calcium stearate 7631-86-9, Silica, uses 9002-88-4

470458-80-1 470467-14-2

(steel sheets surface-treated with alkali-sol. polyurethane-based lubricating film exhibiting excellent **formability** and film removal property for fuel tanks)

IT 9002-84-0, Polytetrafluoroethylene

(wax; steel sheets surface-treated with alkali-sol. polyurethane-based lubricating film exhibiting excellent **formability** and film removal property for fuel tanks)

X L66 ANSWER 3 OF 13 HCAPLUS COPYRIGHT 2002 ACS

2002:183764 Document No. 136:235302 Stainless steel sheet precoated with polyurethane resin lubricant for manufacture of automotive fuel tanks. Mori, Yoichiro; Miyasaka, Akihiro; Kanai, Hiroshi; Yamaoka, Ikuro; Tawa, Tsutomu; Kouda, Chikako; Nishimura, Mitsuhiro (Nippon Steel Corporation, Japan; Mitsui Takeda Chemicals, Inc.). Eur. Pat. Appl. EP 1186351 A1 20020313, 24 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-119050 20010807. PRIORITY: JP 2000-240595 20000809.

AB The **stainless steel** sheets of austenitic or **ferritic** type are precoated with sol. lubricating resin films, and are used for manuf. of automotive fuel tanks by press forming. The sol. lubricating resin is based on: (a) alkali-sol. polyurethane resin contg. a carboxyl group or a sulfonic acid group, and having glass-transition point .gtoreq.100.degree. as dry film; (b) waxy lubricant added at 1-30% based on the polyurethane; and (c) optional SiO2 powder at 1-30% of the polyurethane. The polyurethane resin for coating is preferably prepd. from polyester polyol, and the residual acidic groups are neutralized with NaOH or KOH. The fabricated fuel tanks are typically treated by washing with alk. or hot water to remove the sol. lubricating layer, followed by optional spot **welding** of the tank seams. The austenitic stainless steel sheets typically contain C 0.033, Si 1.43, Mn 1.07, Cr 17.17, Ni 6.85, Cu 2.23, P 0.028, S 0.001, and N 0.060%.

IT 403658-06-0

(for fuel tanks; stainless steel sheet with polyurethane waxy coating for manuf. of fuel tanks)

RN 403658-06-0 HCAPLUS

CN Iron alloy, base, Fe 51-91, Cr 9-30, Al 0-5, Mn 0-5, Ni 0-5, Si 0-3, C 0-0.5, N 0-0.2, P 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	51 - 91	7439-89-6
Cr	9 - 30	7440-47-3
Al	0 - 5	7429-90-5
Mn	0 - 5	7439-96-5
Ni	0 - 5	7440-02-0
Si	0 - 3	7440-21-3
C	0 - 0.5	7440-44-0
N	0 - 0.2	17778-88-0
P	0 - 0.1	7723-14-0

IC ICM B05D007-14

ICS C08G018-08; C09D175-04; B32B015-18; B21J003-00; B60K015-03

CC 55-11 (Ferrous Metals and Alloys)

Section cross-reference(s): 42

IT **Welding** of metals

(spot, seam, on fuel tank; stainless steel sheet with polyurethane and lubricant for manuf. of fuel tanks)

IT 110218-32-1 112236-14-3 292864-70-1 403658-05-9

403658-06-0 403658-07-1 403658-08-2 403658-09-3

403658-10-6 403658-11-7

(for fuel tanks; stainless steel sheet with polyurethane waxy coating for manuf. of fuel tanks)

★ L66 ANSWER 4 OF 13 HCAPLUS COPYRIGHT 2002 ACS

2001:704948 Document No. 135:245482 Stainless steel plate for bicycle disk brakes and manufacture thereof. Ozaki, Yoshihiro; Hirasawa, Junichiro; Miyazaki, Atsushi; Sato, Susumu (Kawasaki Steel Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2001262282 A2 20010926, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-74424 20000316.

AB The stainless steel contains C .ltoreq.0.1, N .ltoreq.0.1, and .Cr 10.0-20.0%. The steel has a processed ferrite structure and a Vickers hardness of 250-300. The steel slab is hot rolled to obtain a single-phase ferritic structure and then cold rolled at a draft of 15-70%.

IT 360579-88-0

(stainless steel plate for bicycle disk brakes and manuf. thereof)

RN 360579-88-0 HCAPLUS

CN Iron alloy, base, Fe 64-90, Cr 10-20, Mn 0-2.5, Al 0-2, Cu 0-2, Mo 0-2, Ni 0-2, Co 0-1, Nb 0-1, Ti 0-1, V 0-1, Zr 0-1, Si 0-0.5, C 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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=====+=====+=====

Fe	64 - 90	7439-89-6
Cr	10 - 20	7440-47-3
Mn	0 - 2.5	7439-96-5
Al	0 - 2	7429-90-5
Cu	0 - 2	7440-50-8
Mo	0 - 2	7439-98-7
Ni	0 - 2	7440-02-0
Co	0 - 1	7440-48-4
Nb	0 - 1	7440-03-1
Ti	0 - 1	7440-32-6
V	0 - 1	7440-62-2
Zr	0 - 1	7440-67-7
Si	0 - 0.5	7440-21-3
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

IC ICM C22C038-00

ICS B62L001-00; C21D009-46; C22C038-18; C22C038-58; F16D065-12

CC 55-3 (Ferrous Metals and Alloys)

ST **stainless steel ferritic** bicycle disk
brake hardness

IT 360578-96-7 360578-97-8 360578-98-9 360578-99-0 360579-00-6
360579-01-7 360579-02-8 360579-04-0 360579-07-3 360579-08-4
360579-09-5 360579-10-8 **360579-88-0**

(stainless steel plate for bicycle disk brakes and manuf.
thereof)

L66 ANSWER 5 OF 13 HCAPLUS COPYRIGHT 2002 ACS

2001:488676 Document No. 135:64462 **Ferritic**

stainless steel strip for press

formability with resistance to ridging defects. Hirata,
Norimasa; Yokota, Takeshi; Kato, Yasushi; Ujio, Takumi; Satoh,
Susumu (Kawasaki Steel Corporation, Japan). Eur. Pat. Appl. EP
1113084 A1 20010704, 26 pp. DESIGNATED STATES: R: AT, BE, CH, DE,
DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI,
RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-126068

20001129. PRIORITY: JP 1999-345449 19991203; JP 2000-47789
20000224.

AB The **ferritic stainless steel** resistant

to the surface ridging defects contains C .ltoreq.0.1, Si
.ltoreq.1.5, Mn .ltoreq.1.5, Cr 5-50, Ni .ltoreq.2.0, P
.ltoreq.0.08, S .ltoreq.0.02, and N .ltoreq.0.1%, optionally with Nb
.ltoreq.0.5, Ti .ltoreq.0.5, Al .ltoreq.0.2, V .ltoreq.0.3, Zr
.ltoreq.0.3, Mo .ltoreq.2.5, Cu .ltoreq.2.5, W .ltoreq.2.0,
rare-earth metals .ltoreq.0.1, B .ltoreq.0.05, Ca .ltoreq.0.02,
and/or Mg .ltoreq.0.002%. The stainless steel ingot slab is hot
rolled with 30% redn. and max. section-temp. difference
<200.degree., annealed, and cold rolled, and the strip product is
finished by annealing for .ltoreq.300 s at 700-1100.degree. for the

av. grain size of 3-100 .mu.m with controlled crystallog. orientation. The typical stainless steel for the smooth strip 0.6 mm thick suitable for deep drawing contains C 0.0481, Si 0.55, Mn 0.759, Cr 16.83, Ni 0.3211, P 0.0218, S 0.0033, and N 0.0154%.

IT 345953-85-7 345953-86-8
(alloying of; **ferritic stainless steel** alloyed for press **formability** with surface ridging resistance)

RN 345953-85-7 HCAPLUS

CN Iron alloy, base, Fe 45-95, Cr 5-50, Ni 0-2, Mn 0-1.5, Si 0-1.5, C 0-0.1, N 0-0.1, P 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====		
Fe	45 - 95	7439-89-6
Cr	5 - 50	7440-47-3
Ni	0 - 2	7440-02-0
Mn	0 - 1.5	7439-96-5
Si	0 - 1.5	7440-21-3
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0
P	0 - 0.1	7723-14-0

RN 345953-86-8 HCAPLUS

CN Iron alloy, base, Fe 36-95, Cr 5-50, Cu 0-2.5, Mo 0-2.5, Ni 0-2, W 0-2, Mn 0-1.5, Si 0-1.5, Nb 0-0.5, Ti 0-0.5, V 0-0.3, Zr 0-0.3, Al 0-0.2, C 0-0.1, misch metal 0-0.1, N 0-0.1, P 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====		
Fe	36 - 95	7439-89-6
Cr	5 - 50	7440-47-3
Cu	0 - 2.5	7440-50-8
Mo	0 - 2.5	7439-98-7
Ni	0 - 2	7440-02-0
W	0 - 2	7440-33-7
Mn	0 - 1.5	7439-96-5
Si	0 - 1.5	7440-21-3
Nb	0 - 0.5	7440-03-1
Ti	0 - 0.5	7440-32-6
V	0 - 0.3	7440-62-2
Zr	0 - 0.3	7440-67-7
Al	0 - 0.2	7429-90-5
C	0 - 0.1	7440-44-0
Misch metal	0 - 0.1	8049-20-5
N	0 - 0.1	17778-88-0
P	0 - 0.1	7723-14-0

IC ICM C22C038-00

ICS C22C038-18; C21D008-02; C21D009-46; C21D008-04

CC 55-3 (Ferrous Metals and Alloys)
 ST **ferritic stainless steel** strip surface
 ridging prevention
 IT Crystal orientation
Metalworking
 Surface structure
 (of **stainless steel**; **ferritic**
stainless steel alloyed for press
formability with surface ridging resistance)
 IT 345953-85-7 345953-86-8
 (alloying of; **ferritic stainless**
steel alloyed for press **formability** with
 surface ridging resistance)
 IT 345953-87-9 345953-89-1 345953-91-5 345953-93-7 345953-94-8
 345953-96-0 345953-98-2
 (**ferritic stainless steel** alloyed
 for press **formability** with surface ridging resistance)
 IT 12597-68-1, **Stainless steel**, uses
 (**ferritic**; alloying of **ferritic**
stainless steel for press **formability**
 with ridging resistance)

L66 ANSWER 6 OF 13 HCAPLUS COPYRIGHT 2002 ACS

2001:477611 Document No. 135:80175 Manufacture of **ferritic**
stainless steel hot-rolled sheet with good
 bendability. Ozaki, Yoshihiro; Hirasawa, Junichiro; Miyazaki,
 Atsushi; Sato, Susumu; Hiruta, Toshiki (Kawasaki Steel Corp.,
 Japan). Jpn. Kokai Tokkyo Koho JP 2001-181798 A2 20010703, 8 pp.
 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-361373 19991220.

AB The title sheet is manufd. from steel contg. C .ltoreq.0.1, Si
 .ltoreq.1.0, Mn .ltoreq.1.0, P .ltoreq.0.1, S .ltoreq.0.01, Cr
 9.0-35.0, Ni .ltoreq.1.0, Al .ltoreq.1.0, and N .ltoreq.0.1%. The
 steel is hot finish rolled at a finish temp. of .ltoreq.800, a
 friction coeff. in the last 3 passes of .ltoreq.0.2, and an
 accumulated draft in the last three passes of .gtoreq.50%. No water
 is used for strip cooling in hot finish rolling or for descaling
 prior to the finish hot rolling. The hardness on the surface and in
 the sheet center, Hs and Hc, satisfy the condition: Hs/Hc
 .ltoreq.1.25.

IT 347359-15-3
 (manuf. of **ferritic stainless steel**
 hot-rolled sheet with good bendability)

RN 347359-15-3 HCAPLUS

CN Iron alloy, base, Fe 61-91, Cr 9-35, Al 0-1, Mn 0-1, Ni 0-1, Si 0-1, C
 0-0.1, N 0-0.1, P 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	61 - 91	7439-89-6
Cr	9 - 35	7440-47-3
Al	0 - 1	7429-90-5

Mn	0	-	1	7439-96-5
Ni	0	-	1	7440-02-0
Si	0	-	1	7440-21-3
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0
P	0	-	0.1	7723-14-0

IC ICM C22C038-00
ICS B21B003-02; C21D009-46; C22C038-40; C22C038-54
CC 55-11 (Ferrous Metals and Alloys)
IT Bending
Hardness (mechanical)
(manuf. of **ferritic stainless steel**
hot-rolled sheet with good bendability)
IT 347359-11-9 347359-12-0 347359-13-1 347359-14-2
347359-15-3
(manuf. of **ferritic stainless steel**
hot-rolled sheet with good bendability)

L66 ANSWER 7 OF 13 HCAPLUS COPYRIGHT 2002 ACS
1999:801730 Document No. 132:38677 Manufacture of heat-resistant
high-chromium steels having excellent low-temperature toughness and
creep strength. Hasegawa, Toshinaga; Tomita, Yukio (Nippon Steel
Corp., Japan). Jpn. Kokai Tokkyo Koho JP 11350031 A2 19991221
Heisei, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
1998-163761 19980611.
AB Steel slabs contg. C 0.03-0.20, Si 0.01-1.0, Mn 0.10-2.0, Al
0.002-0.1, N 0.005-0.1, Cr 8-13, and Mo 0.5-2.0 and/or W 0.5-4.0
wt.% are successively treated by the following steps to give the
title steels; (1) heating at 1000-1300.degree., hot rolling by
30-90% draft by beginning at 800-1250.degree. and finishing at
.gtoreq.700.degree., (2) cooling to .ltoreq.300.degree., (3)
reheating to 1150-1300.degree., (4) cooling to 700-1000.degree. by
cooling rate .gtoreq.1.degree./min and retaining at the temp. region
for 10-120 min, (5) cooling to .ltoreq.300.degree. by cooling rate
0.1-50.degree./s, and (6) tempering at .gtoreq.600.degree. and <Acl
transformation point. Alternatively, the manufg. steps involves
(1)-(3), cooling to 850-900.degree. and further cooling to
700-800.degree. by cooling rate 0.1-2.degree./min, (5), and (6).
The steel slabs may further contain (A) .gtoreq.1 selected from V
0.05-0.50, Nb 0.01-0.20, Ta 0.02-0.40, Ti 0.005-0.10, and Zr
0.005-0.10, (B) .gtoreq.1 selected from Ni 0.05-3.0, Cu 0.05-1.5, Co
0.05-5.0, and B 0.0005-0.01, and/or (C) .gtoreq.1 selected from Mg
0.0005-0.01, Ca 0.0005-0.01, and REM 0.005-0.10 wt.%. The manufg.
process prevents generation of .delta.-ferrite.

IT **252574-38-2**
(manuf. of heat-resistant high-Cr steels having excellent
low-temp. toughness and creep strength)

RN 252574-38-2 HCAPLUS
CN Iron alloy, base, Fe 67-92, Cr 8-13, Co 0-5, W 0-4, Ni 0-3, Mn 0.1-2, Mo
0-2, Cu 0-1.5, Si 0-1, V 0-0.5, Ta 0-0.4, C 0-0.2, Nb 0-0.2, Al 0-0.1, N
0-0.1, Ti 0-0.1, Zr 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	67	-	92	7439-89-6
Cr	8	-	13	7440-47-3
Co	0	-	5	7440-48-4
W	0	-	4	7440-33-7
Ni	0	-	3	7440-02-0
Mn	0.1	-	2	7439-96-5
Mo	0	-	2	7439-98-7
Cu	0	-	1.5	7440-50-8
Si	0	-	1	7440-21-3
V	0	-	0.5	7440-62-2
Ta	0	-	0.4	7440-25-7
C	0	-	0.2	7440-44-0
Nb	0	-	0.2	7440-03-1
Al	0	-	0.1	7429-90-5
N	0	-	0.1	17778-88-0
Ti	0	-	0.1	7440-32-6
Zr	0	-	0.1	7440-67-7

IC ICM C21D008-02

ICS C22C038-00; C22C038-22; C22C038-54

CC 55-11 (Ferrous Metals and Alloys)

IT 252574-37-1 **252574-38-2**

(manuf. of heat-resistant high-Cr steels having excellent low-temp. toughness and creep strength)

L66 ANSWER 8 OF 13 HCAPLUS COPYRIGHT 2002 ACS

1997:187141 Document No. 126:189090 **Ferritic**

stainless steel suitable for hot working without

tempering. Hewitt, Jack; Tarboton, John Nigel (Highveld Steel and Vanadium Corporation Limited, S. Afr.; Samancor Limited; Industrial Development Corporation of South Africa; Hewitt, Jack; Tarboton, John Nigel). PCT Int. Appl. WO 9703216 A1 19970130, 41 pp.

DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English).

CODEN: PIXXD2. APPLICATION: WO 1996-GB1624 19960708. PRIORITY: ZA 1995-5681 19950707.

AB The **ferritic stainless steel**

microalloyed for improved hot **workability** contains C ✓

0.001-0.1, Si 0.1-1.0, Mn 0.1-1.5, Cr 10.5-14, Ni 0.1-1.0, N

0.001-0.1, V 0.005-0.2, Ti 0.001-0.6, Mo 0.001-1.0, Al 0.001-0.1, B

0.0001-0.015, P 0.001-0.045, S 0.001-0.04, Co 0.0001-0.2, Cu

0.01-0.5, Nb 0.001-0.5, and Zr 0.001-0.1%. The hot (1000.degree.)

austenite in cooling initially transforms to ferrite at

800-920.degree., and after the cooling at 10.degree./min the

martensite content is <30%. The stainless steel ingot slab can be

hot rolled to manuf. a coiled strip having uniform properties without a subsequent batch annealing. The hot-rolled plate or cold-rolled strip can be annealed or tempered in line by rapid reheating for 100 s at 805.degree.. The typical stainless steel contains mainly C 0.020, Si 0.75, Mn 1.14, Cr 11.59, Ni 0.35, N 0.019, V 0.11, Mo 0.02, Al 0.027, P 0.036, and Cu 0.08%.

IT 187408-22-6

(microalloyed; **ferritic stainless steel** suitable for hot working without tempering)

RN 187408-22-6 HCAPLUS

CN Iron alloy, base, Fe 79-90, Cr 10-14, Mn 0.1-1.5, Ni 0.1-1, Si 0.1-1, Mo 0-1, Ti 0-0.6, Cu 0-0.5, Nb 0-0.5, Co 0-0.2, V 0-0.2, Al 0-0.1, C 0-0.1, N 0-0.1, Zr 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	79 - 90	7439-89-6
Cr	10 - 14	7440-47-3
Mn	0.1 - 1.5	7439-96-5
Ni	0.1 - 1	7440-02-0
Si	0.1 - 1	7440-21-3
Mo	0 - 1	7439-98-7
Ti	0 - 0.6	7440-32-6
Cu	0 - 0.5	7440-50-8
Nb	0 - 0.5	7440-03-1
Co	0 - 0.2	7440-48-4
V	0 - 0.2	7440-62-2
Al	0 - 0.1	7429-90-5
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0
Zr	0 - 0.1	7440-67-7

IC ICM C22C038-18

ICS C22C038-00

CC 55-3 (Ferrous Metals and Alloys)

ST **ferritic stainless steel** hot rolling strip; **stainless steel** microalloying **ferrite** strip

IT Rolling (metals)
(hot; **ferritic stainless steel** suitable for hot working without tempering)

IT Cast alloys
(ingot slab; **ferritic stainless steel** suitable for hot working without tempering)

IT 187408-22-6 187408-23-7 187408-24-8 187408-25-9
187408-26-0 187408-27-1 187408-28-2
(microalloyed; **ferritic stainless steel** suitable for hot working without tempering)

ferritic stainless steels. Naoi, Hisashi; Mimura, Hiroyuki; Ookami, Masahiro; Fujita, Toshio (Shinnippon Seitetsu Kk, Japan; Fujita Toshio). Jpn. Kokai Tokkyo Koho JP 07286246 A2 19951031 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-78543 19940418.

AB The steels contain C 0.02-0.15, Mn 0.05-1.50, Cr 8.00-13.00, Ni 1.00-1.00, Mo 0.50, W 2.00-3.50, V 0.10-0.30, Nb 0.01-0.15, Co 4.0, N 0.01-0.10, Si 0.21-0.50, and Al 0.002-0.05% with Si + 10Al 0.80%. The steels have high high-temp. strength, toughness, and oxidn. resistance. Optionally, the steels contain 0.0010-0.0100% B. The steels are esp. suitable for boiler tubes.

IT 173717-38-9

(high-strength and heat-resistant for boiler tubes)

RN 173717-38-9 HCAPLUS

CN Iron alloy, base, Fe 75-90, Cr 8-13, Co 0-4, W 2-3.5, Mn 0-1.5, Ni 0-1, Si 0.2-0.5, Mo 0-0.5, V 0.1-0.3, C 0-0.2, Nb 0-0.2, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	75	-	90	7439-89-6
Cr	8	-	13	7440-47-3
Co	0	-	4	7440-48-4
W	2	-	3.5	7440-33-7
Mn	0	-	1.5	7439-96-5
Ni	0	-	1	7440-02-0
Si	0.2	-	0.5	7440-21-3
Mo	0	-	0.5	7439-98-7
V	0.1	-	0.3	7440-62-2
C	0	-	0.2	7440-44-0
Nb	0	-	0.2	7440-03-1
N	0	-	0.1	17778-88-0

IC ICM C22C038-00

ICS C22C038-52

CC 55-3 (Ferrous Metals and Alloys)

ST heat resistance stainless steel pipe; oxidn **ferritic stainless steel** pipe; boiler tube stainless steel

IT Pipes and Tubes

(boiler, high-strength and heat-resistant **ferritic stainless steels** for)

IT 173287-37-1 173287-38-2 173287-39-3 173287-40-6
173717-38-9

(high-strength and heat-resistant for boiler tubes)

L66 ANSWER 10 OF 13 HCAPLUS COPYRIGHT 2002 ACS

1995:325818 Document No. 122:111669 **Ferritic stainless steels** having good high-temperature

ductility and strength. Takabe, Hideki; Sawaragi, Yoshiatsu

(Sumitomo Metal Ind, Japan). Jpn. Kokai Tokkyo Koho JP 06293940 A2

19941021 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP

1993-81680 19930408. ✓
 AB The steels contain C 0.02-0.15, Si .ltoreq.0.5, Mn 0.1-1.5, P ✓
 .ltoreq.0.025, S .ltoreq.0.015, O .ltoreq.0.005, Cr ✓8-14, V ✓0.1-0.3,
 Nb ✓0.01-0.2, N 0.01-0.1, Al .ltoreq.0.05, B 0.001-0.02, Cu ✓0.05-3.0,
 Co 1.0-5.0, and Mo ✓0.01-1.2 and/or W ✓0.8-3.5% with Cu/Co ratio
 .ltoreq.2.0. The steels may contain 0.1-1.5% Ni with Cu/(Co + Ni)
 .ltoreq.2.0.
 IT **160935-81-9**
 (ferritic having high-temp. **ductility** and strength)
 RN 160935-81-9 HCAPLUS
 CN Iron alloy, base, Fe 69-90, Cr 8-14, Co 1-5, W 0.8-3.5, Cu 0-3, Mn
 0.1-1.5, Ni 0.1-1.5, Mo 0-1.2, Si 0-0.5, V 0.1-0.3, C 0-0.2, Nb 0-0.2, N
 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	69 - 90	7439-89-6
Cr	8 - 14	7440-47-3
Co	1 - 5	7440-48-4
W	0.8 - 3.5	7440-33-7
Cu	0 - 3	7440-50-8
Mn	0.1 - 1.5	7439-96-5
Ni	0.1 - 1.5	7440-02-0
Mo	0 - 1.2	7439-98-7
Si	0 - 0.5	7440-21-3
V	0.1 - 0.3	7440-62-2
C	0 - 0.2	7440-44-0
Nb	0 - 0.2	7440-03-1
N	0 - 0.1	17778-88-0

IC ICM C22C038-00
 ICS C22C038-32
 CC 55-3 (Ferrous Metals and Alloys)
 ST **stainless ferritic steel**
ductility strength
 IT 160853-78-1 160853-79-2 160853-80-5 160853-81-6 160853-82-7
 160853-83-8 160853-84-9 160853-85-0 160853-86-1 160853-87-2
 160853-88-3 160853-89-4 160853-90-7 160853-91-8 160853-92-9
 160853-93-0 160853-94-1 160935-80-8 **160935-81-9**
 (ferritic having high-temp. **ductility** and strength)

✓ L66 ANSWER 11 OF 13 HCAPLUS COPYRIGHT 2002 ACS
 1995:255532 Document No. 122:36066 Free-machining martensitic
 stainless steel. Kosa, Theodore (CRS Holdings, Inc., USA). U.S. US
 5362337 A 19941108, 8 pp. (English). CODEN: USXXAM. APPLICATION:
 US 1993-127341 19930928.
 AB The martensitic stainless steel having good machinability, hardness,
 and corrosion resistance contains C .ltoreq.0.07, N .ltoreq.0.07
 (with C and N .ltoreq.0.08), Cu ✓1.0-3.0, Cr ✓10.0-14.0, Ni ✓
 .ltoreq.1.0, Mo ✓.ltoreq.1.0, S ✓0.15-0.55, Mn .ltoreq.1.25, Si ✓
 .ltoreq.1.0, P .ltoreq.0.06, B ✓.ltoreq.0.01, Te ✓.ltoreq.0.10, Se ✓

.ltoreq.0.25, Bi .ltoreq.0.15, and Nb .ltoreq.0.10 wt.%. The **stainless steel** is alloyed for .delta.-

ferrite content .ltoreq.11 vol.% in the wrought condition to promote hardness and machinability. The machinability in turning or drilling is comparable to that of AISI 416 grade. The martensitic steel suitable for good machinability and Rockwell C-scale hardness of 40 contains C 0.049, N 0.031, Cu 2.27, Cr 13.23, Ni 0.23, Mo 0.05, S 0.36, Mn 0.46, Si 0.62, and P 0.014 wt.%.

IT 159843-89-7 159843-91-1

(free-machining; martensitic stainless steel alloyed for hardness and machinability)

RN 159843-89-7 HCAPLUS

CN Iron alloy, base, Fe 77-89, Cr 10-14, Cu 1-3, Mn 0-1.2, Mo 0-1, Ni 0-1, Si 0-1, S 0.2-0.6, Bi 0-0.2, Se 0-0.2, C 0-0.1, N 0-0.1, Nb 0-0.1, P 0-0.1, Te 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	77 - 89	7439-89-6
Cr	10 - 14	7440-47-3
Cu	1 - 3	7440-50-8
Mn	0 - 1.2	7439-96-5
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
Si	0 - 1	7440-21-3
S	0.2 - 0.6	7704-34-9
Bi	0 - 0.2	7440-69-9
Se	0 - 0.2	7782-49-2
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0
Nb	0 - 0.1	7440-03-1
P	0 - 0.1	7723-14-0
Te	0 - 0.1	13494-80-9

RN 159843-91-1 HCAPLUS

CN Iron alloy, base, Fe 80-89, Cr 10-14, Cu 1-3.5, Mn 0-1.2, Mo 0-1, Ni 0-1, Si 0-1, S 0.2-0.6, Bi 0-0.2, Se 0-0.2, C 0-0.1, N 0-0.1, Nb 0-0.1, P 0-0.1, Te 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	80 - 89	7439-89-6
Cr	10 - 14	7440-47-3
Cu	1 - 3.5	7440-50-8
Mn	0 - 1.2	7439-96-5
Mo	0 - 1	7439-98-7
Ni	0 - 1	7440-02-0
Si	0 - 1	7440-21-3
S	0.2 - 0.6	7704-34-9
Bi	0 - 0.2	7440-69-9

Se	0	-	0.2	7782-49-2
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0
Nb	0	-	0.1	7440-03-1
P	0	-	0.1	7723-14-0
Te	0	-	0.1	13494-80-9

IC ICM C22C038-20

NCL 148325000

CC 55-3 (Ferrous Metals and Alloys)

IT **159843-89-7** 159843-90-0 **159843-91-1**

159843-92-2 159843-93-3 159858-46-5 159858-47-6 159858-48-7

159858-49-8 159858-50-1 159858-51-2 159858-52-3 159858-53-4

(free-machining; martensitic stainless steel alloyed for hardness and machinability)

X L66 ANSWER 12 OF 13 HCAPLUS COPYRIGHT 2002 ACS

1990:81953 Document No. 112:81953 Processing of corrosion-resistant steel strips. Hewitt, Jack (Middelburg Steel and Alloys (Pty.) Ltd., S. Afr.). Eur. Pat. Appl. EP 343008 A2 19891123, 15 pp. DESIGNATED STATES: R: AT, BE, DE, ES, FR, GB, IT, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1989-305108 19890519. PRIORITY: ZA 1988-3551 19880519.

AB **Ferritic stainless steels** of AISI 409, 410, or 420 type are hot rolled in the austenitic temp. range, coiled, and cooled at 1-10.degree./min in the 650-850.degree. range (characteristic of austenite transformation to ferrite and carbides) to prevent local hardening by formation of bainite or martensite. The stainless steels contain C .ltoreq.0.25, Cr 10-18, Ni 0-5, N and P .ltoreq.0.1 each, Mn .ltoreq.2.5, Si .ltoreq.2.0, Al .ltoreq.0.5, C 0-2.0, and optionally Ti, Mo, V, Zr, and/or Nb .ltoreq.1.0% each. No sep. heat treatment in annealing furnace is required. The hot-rolled strips are thermally insulated to control the cooling rate. The strips show Brinell hardness of 165, tensile strength 520 mPa, yield point 350 mPa, and elongation 25%, and is suitable for manuf. of cutlery and tools.

IT **125327-22-2**

(ferritic, hot rolling and heat treatment of)

RN 125327-22-2 HCAPLUS

CN Iron alloy, base, Fe 65-90, Cr 10-18, Ni 0-5, Mn 0-2.5, Cu 0-2, Si 0-2, Mo 0-1, Nb 0-1, Ti 0-1, V 0-1, Zr 0-1, Al 0-0.5, C 0-0.2, N 0-0.1, P 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====		
Fe	65 - 90	7439-89-6
Cr	10 - 18	7440-47-3
Ni	0 - 5	7440-02-0
Mn	0 - 2.5	7439-96-5
Cu	0 - 2	7440-50-8
Si	0 - 2	7440-21-3

Mo	0	-	1	7439-98-7
Nb	0	-	1	7440-03-1
Ti	0	-	1	7440-32-6
V	0	-	1	7440-62-2
Zr	0	-	1	7440-67-7
Al	0	-	0.5	7429-90-5
C	0	-	0.2	7440-44-0
N	0	-	0.1	17778-88-0
P	0	-	0.1	7723-14-0

IC ICM C21D008-02
ICS C21D001-84; C21D006-00; C22C038-18; C22C038-24; C22C038-28;
C22C038-40

CC 55-11 (Ferrous Metals and Alloys)

IT 12597-68-1, **Stainless steel**, uses and
miscellaneous 12611-79-9, AISI 410 37241-55-7, AISI 420
39418-83-2, AISI 409 **125327-22-2** 125327-23-3
125327-24-4

(**ferritic**, hot rolling and heat treatment of)

L66 ANSWER 13 OF 13 HCAPLUS COPYRIGHT 2002 ACS

1972:491512 Document No. 77:91512 Structural diagram of low-carbon
stainless steels applicable to metal that was cast and deposited
during welding. Potak, Ya. M.; Sagalevich, E. A. (Moscow, USSR).
Avtomat. Svarka, 25(5), 10-13 (Russian) 1972. CODEN: AVSVAU.

AB By using metallog. and magnetic analyses of 110 melts, a new
structural diagram is developed for cast stainless steels with
corrections for hard-surfaced and weld metals. The applicability
regions for the diagram are: C and N 0.03-0.20, Cr 10-22, Ni
.ltoreq.10, Si .ltoreq.1, Mn .ltoreq.1, Mo .ltoreq.2, Al
.ltoreq.1.5, Nb .ltoreq.0.2, Ti .ltoreq.1, Cu .ltoreq.2.5, Co
.ltoreq.8, V .ltoreq.0.5, and W .ltoreq.1%.

IT **37252-07-6**

(structural diagram of stainless, hard-facing and welding in
relation to)

RN 37252-07-6 HCAPLUS

CN Iron alloy, base, Fe 49-90, Cr 10-22, Ni 0-10, Co 0-8, Cu 0-2.5, Mo
0-2, Al 0-1.5, Mn 0-1, Si 0-1, Ti 0-1, W 0-1, V 0-0.5, C 0-0.2, N 0-0.2, Nb
0-0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	49 - 90	7439-89-6
Cr	10 - 22	7440-47-3
Ni	0 - 10	7440-02-0
Co	0 - 8	7440-48-4
Cu	0 - 2.5	7440-50-8
Mo	0 - 2	7439-98-7
Al	0 - 1.5	7429-90-5
Mn	0 - 1	7439-96-5
Si	0 - 1	7440-21-3

Ti	0	-	1	7440-32-6
W	0	-	1	7440-33-7
V	0	-	0.5	7440-62-2
C	0	-	0.2	7440-44-0
N	0	-	0.2	17778-88-0
Nb	0	-	0.2	7440-03-1

CC 55-7 (Ferrous Metals and Alloys)

IT 37252-07-6

(structural diagram of stainless, hard-facing and welding in relation to)

=> d 169 1-21 cbib abs hitstr hitind

L69 ANSWER 1 OF 21 HCAPLUS COPYRIGHT 2002 ACS

2002:602063 Document No. 137:128021 Manufacture of high-chromium ferritic heat-resistant steel sheet by controlled cooling in continuous casting. Kato, Toru; Kono, Kaori (Sumitomo Metal Industries Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002224798 A2 20020813, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-27841 20010205.

AB A sheet which demonstrates high resistance to cracking in hot rolling is from steel contg. C 0.03-0.2, Si 0.05-0.7, Mn 0.1-1.5, Cr 8-14, W 0.8-4, V 0.1-0.3, Nb 0.01-0.2, N 0.005-0.2, and Al 0.002-0.05%. In the secondary cooling zone in continuous casting of the steel, the specific water consumption is 0.1-0.6 L/kg-steel and the secondary cooling is completed before the central portion of the slab in the thickness direction thereof starts to solidify. The steel is continuously cast to obtain a slab with a rectangular cross section having a thickness of .gtoreq.150 mm. The slab is primarily rolled at a draft of 0.1-0.4, while the surface temp. of the slab is .gtoreq.400.degree., and then hot rolled to give a finished product.

IT 444201-44-9

(manuf. of high-chromium ferritic heat-resistant steel sheet by controlled cooling in continuous casting)

RN 444201-44-9 HCAPLUS

CN Iron alloy, base, Fe 69-91, Cr 8-14, W 0.8-4, Co 0-4, Cu 0-3.5, Mn 0.1-1.5, Mo 0-1.2, Ni 0-1, Si 0-0.7, V 0.1-0.3, C 0-0.2, N 0-0.2, Nb 0-0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	69 - 91	7439-89-6
Cr	8 - 14	7440-47-3
W	0.8 - 4	7440-33-7
Co	0 - 4	7440-48-4
Cu	0 - 3.5	7440-50-8
Mn	0.1 - 1.5	7439-96-5
Mo	0 - 1.2	7439-98-7
Ni	0 - 1	7440-02-0

Si	0	-	0.7	7440-21-3
V	0.1	-	0.3	7440-62-2
C	0	-	0.2	7440-44-0
N	0	-	0.2	17778-88-0
Nb	0	-	0.2	7440-03-1

IC ICM B22D011-00

ICS B22D011-12; B22D011-124; B22D011-126; C22C038-00; C22C038-54

CC 55-2 (Ferrous Metals and Alloys)

IT 444201-38-1 444201-39-2 444201-40-5 444201-41-6 444201-42-7
444201-43-8 **444201-44-9**

(manuf. of high-chromium ferritic heat-resistant steel sheet by controlled cooling in continuous casting)

L69 ANSWER 2 OF 21 HCAPLUS COPYRIGHT 2002 ACS

2002:568255 Document No. 137:128034 Chromium-containing steel bar having good corrosion resistance and reinforced concrete structure containing it. Ushiro, Takumi; Hirasawa, Junichiro; Ota, Hiroki; Furukimi, Osamu (Kawasaki Steel Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2002212682 A2 20020731, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-8380 20010117.AB The steel bar comprises C[✓] >0.001 and <0.3, N[✓] >0.001 and <0.3, Si[✓] >0.1 and <4.0, Mn[✓] >0.1 and <4.0, Cr[✓] >5.0 and <15.0, Co[✓] >0.01 and <1.0, Al <0.04, P <0.04, and S <0.03 wt.%.IT **444106-24-5**

(Cr-contg. steel bar having good corrosion resistance and reinforced concrete structure contg. it)

RN 444106-24-5 HCAPLUS

CN Iron alloy, base, Fe 60-95, Cr 5-15, Mn 0.1-4, Si 0.1-4, Cu 0-3, Mo 0-3, Ni 0-3, Co 0-1, Nb 0-1, Ta 0-1, Ti 0-1, V 0-1, W 0-1, Zr 0-1, C 0-0.3, N 0-0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	60 - 95	7439-89-6
Cr	5 - 15	7440-47-3
Mn	0.1 - 4	7439-96-5
Si	0.1 - 4	7440-21-3
Cu	0 - 3	7440-50-8
Mo	0 - 3	7439-98-7
Ni	0 - 3	7440-02-0
Co	0 - 1	7440-48-4
Nb	0 - 1	7440-03-1
Ta	0 - 1	7440-25-7
Ti	0 - 1	7440-32-6
V	0 - 1	7440-62-2
W	0 - 1	7440-33-7
Zr	0 - 1	7440-67-7
C	0 - 0.3	7440-44-0
N	0 - 0.3	17778-88-0

IC ICM C22C038-00
ICS C22C038-38; C22C038-58
CC 55-3 (Ferrous Metals and Alloys)
Section cross-reference(s): 58
IT 444105-78-6 444105-80-0 444105-82-2 444105-84-4 444105-86-6
444105-87-7 444105-88-8 444105-89-9 444105-90-2 444105-91-3
444105-92-4 444105-93-5 444105-94-6 444105-95-7 444105-96-8
444105-97-9 444105-98-0 444105-99-1 444106-00-7 444106-01-8
444106-02-9 444106-03-0 444106-04-1 444106-05-2 444106-06-3
444106-07-4 444106-08-5 444106-09-6 444106-10-9 444106-11-0
444106-12-1 444106-13-2 444106-14-3 444106-15-4 444106-16-5
444106-17-6 444106-18-7 444106-19-8 444106-20-1 444106-21-2
444106-22-3 444106-23-4 **444106-24-5**

(Cr-contg. steel bar having good corrosion resistance and reinforced concrete structure contg. it)

L69 ANSWER 3 OF 21 HCAPLUS COPYRIGHT 2002 ACS

2001:747226 Document No. 135:291985 Heat-resistant Cr steels suitable for **welded** pipes and boilers. Kawano, Kaori (Sumitomo Metal Industries, Ltd., Japan). Eur. Pat. Appl. EP 1143026 A1 20011010, 24 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-400799 20010328. PRIORITY: JP 2000-93827 20000330; JP 2001-21239 20010130.

AB The heat-resistant steels contain C 0.01-0.25, Cr 0.5-8, V 0.05-0.5, Si .ltoreq.0.7, Mn .ltoreq.1, Mo .ltoreq.2.5, W .ltoreq.5, Nb .ltoreq.0.2, N .ltoreq.0.1, Ti .ltoreq.0.1, Ta .ltoreq.0.2, Cu .ltoreq.0.5, Ni .ltoreq.0.5, Co .ltoreq.0.5, B .ltoreq.0.1, Al 0.001-0.05, Ca .ltoreq.0.01, Mg .ltoreq.0.01, and Nd .ltoreq.0.01%. The microstructure includes ppts. inside the grains with av. diam. of .ltoreq.30 nm present at .gtoreq.1/.mu.m³. The microalloyed Cr steel is suitable for **welded** construction, esp. for boilers and furnace pipes. The typical Cr steel having creep strength of 305 MPa for 8000 h at 500.degree. as well as hot (50.degree.) tensile strength of 502 MPa contains C 0.07, Cr 2.25, V 0.25, Si 0.25, Mn 0.35, Mo 0.12, W 1.55, Nb 0.050, N 0.0046, B 0.0030, Al 0.0039, and Ca 0.0010%.

IT **364329-59-9**
(alloying of; microalloyed Cr steels suitable for heat-resistant **welded** pipes and boilers)

RN 364329-59-9 HCAPLUS

CN Iron alloy, base, Fe 80-100, Cr 0.5-8, W 0-5, Mo 0-2.5, Mn 0-1, Si 0-0.7, Co 0-0.5, Cu 0-0.5, Ni 0-0.5, V 0-0.5, C 0-0.2, Nb 0-0.2, Ta 0-0.2, B 0-0.1, N 0-0.1, Ti 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	80 - 100	7439-89-6
Cr	0.5 - 8	7440-47-3
W	0 - 5	7440-33-7
Mo	0 - 2.5	7439-98-7

Mn	0	-	1	7439-96-5
Si	0	-	0.7	7440-21-3
Co	0	-	0.5	7440-48-4
Cu	0	-	0.5	7440-50-8
Ni	0	-	0.5	7440-02-0
V	0	-	0.5	7440-62-2
C	0	-	0.2	7440-44-0
Nb	0	-	0.2	7440-03-1
Ta	0	-	0.2	7440-25-7
B	0	-	0.1	7440-42-8
N	0	-	0.1	17778-88-0
Ti	0	-	0.1	7440-32-6

IC ICM C22C038-22
ICS C22C038-24

CC 55-3 (Ferrous Metals and Alloys)

ST chromium steel alloying **welded** pipe boiler

IT Boilers
(Cr steel for; microalloyed Cr steels suitable for heat-resistant **welded** parts and boilers)

IT **Welds**
(Cr steels with; microalloyed Cr steels suitable for heat-resistant **welded** pipes and boilers)

IT Creep
(strength, of Cr steel; microalloyed Cr steels suitable for heat-resistant **welded** pipes and boilers)

IT Pipes and Tubes
(**welded**; microalloyed Cr steels suitable for heat-resistant **welded** pipes and boilers)

IT 364329-58-8 364329-59-9
(alloying of; microalloyed Cr steels suitable for heat-resistant **welded** pipes and boilers)

IT 11100-60-0, Chromium steel, uses
(alloying of; microalloyed Cr steels suitable for high-strength **welded** pipes and boilers)

IT 326811-83-0, uses 364329-60-2 364329-61-3, uses 364329-62-4,
uses 364329-63-5 364329-64-6, uses 364329-65-7, uses
364329-66-8 364329-67-9, uses 364329-68-0, uses 364329-69-1,
uses 364329-70-4 364329-71-5, uses 364329-72-6 364329-73-7
364329-74-8 364329-75-9, uses 364329-76-0 364329-77-1
364329-78-2 364329-79-3 364329-80-6, uses 364329-81-7
364329-83-9 364329-84-0
(heat-resistant; microalloyed Cr steels suitable for heat-resistant **welded** pipes and boilers)

IT 7440-02-0, Nickel, uses 7440-25-7, Tantalum, uses 7440-32-6,
Titanium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses
7727-37-9, Nitrogen, uses
(steel microalloyed with; microalloyed Cr steels suitable for heat-resistant **welded** pipes and boilers)

gas-metal-arc **welding** method, and **welded** structure. Iwatsubo, Kiyotaka; Tetsui, Toshimitsu; Kono, Takayuki; Kobayashi, Hideharu; Mabuchi, Youzaburo; Tsurusaki, Yoji; Takatsu, Tamao; Saito, Teiichiro; Inami, Takashi (Mitsubishi Heavy Industries, Ltd., Japan; Nippon-Welding Rod Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 2001219292 A2 (20010814), 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-29582 20000207.

AB The **welding** material contains C 0.01-0.15, Si 0.1-0.6, Mn 0.1-2.0, Cr 8-13, Ni 0.1-1.5, Mo 0.3-2.0, V 0.05-0.5, W 0.08-0.5, Co 0.5-5.0, Ta 0.1-0.5, N .ltoreq.0.08, rare earth metal 0.01-0.1 wt.%, and balance Fe. Optionally, the material contains Cu 0.5-4.0, Ca 0.0005-0.02, and/or Mg 0.0005-0.02 wt.%. Ferritic steel contg. 8-13 wt.% Cr is gas-metal-arc **welded** by using a wire contg. C 0.01-0.15, Si 0.1-0.5, Mn 0.1-2.0, Cr 8-13, Ni 0.1-1.5, Mo 0.3-1.5, V 0.05-0.5, W 0.08-0.5, Co 0.5-5.0, Ta 0.1-0.5, N .ltoreq.0.08, rare earth metal 0.01-0.1 wt.%, and balance Fe under a shielding gas contg. Ar and He and having O concn. .ltoreq.0.25%. **Welded** structure manufd. by using the material or method is also claimed. The method provides good arc stability and the **welded** structure has high toughness and tensile strength.

IT **353743-40-5 353743-41-6**
(wire; gas-metal-arc **welding** of high-Cr ferritic steel for **welded** structure having toughness and tensile strength)

RN 353743-40-5 HCAPLUS

CN Iron alloy, base, Fe 70-90, Cr 8-13, Co 0.5-5, Cu 0.5-4, Mo 0.3-2, Mn 0.1-2, Ni 0.1-1.5, Si 0.1-0.6, Ta 0.1-0.5, W 0.1-0.5, V 0-0.5, C 0-0.2, misch metal 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	70	-	90	7439-89-6
Cr	8	-	13	7440-47-3
Co	0.5	-	5	7440-48-4
Cu	0.5	-	4	7440-50-8
Mo	0.3	-	2	7439-98-7
Mn	0.1	-	2	7439-96-5
Ni	0.1	-	1.5	7440-02-0
Si	0.1	-	0.6	7440-21-3
Ta	0.1	-	0.5	7440-25-7
W	0.1	-	0.5	7440-33-7
V	0	-	0.5	7440-62-2
C	0	-	0.2	7440-44-0
Misch metal	0	-	0.1	8049-20-5
N	0	-	0.1	17778-88-0

RN 353743-41-6 HCAPLUS

CN Iron alloy, base, Fe 74-91, Cr 8-13, Co 0.5-5, Mo 0.3-2, Mn 0.1-2, Ni 0.1-1.5, Si 0.1-0.6, Ta 0.1-0.5, W 0.1-0.5, V 0-0.5, C 0-0.2, misch metal 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	74	-	91	7439-89-6
Cr	8	-	13	7440-47-3
Co	0.5	-	5	7440-48-4
Mo	0.3	-	2	7439-98-7
Mn	0.1	-	2	7439-96-5
Ni	0.1	-	1.5	7440-02-0
Si	0.1	-	0.6	7440-21-3
Ta	0.1	-	0.5	7440-25-7
W	0.1	-	0.5	7440-33-7
V	0	-	0.5	7440-62-2
C	0	-	0.2	7440-44-0
Misch metal	0	-	0.1	8049-20-5
N	0	-	0.1	17778-88-0

IC ICM B23K035-30

ICS C22C038-00; C22C038-52; C22C038-58; B23K103-04

CC 55-9 (Ferrous Metals and Alloys)

ST gas metal arc **welding** chromium steel structure

IT **Welding** of metals

(gas metal-arc; gas-metal-arc **welding** of high-Cr ferritic steel for **welded** structure having toughness and tensile strength)

IT 7439-95-4, Magnesium, uses 7440-70-2, Calcium, uses (microalloying element, in wire; gas-metal-arc **welding** of high-Cr ferritic steel for **welded** structure having toughness and tensile strength)

IT 7782-44-7, Oxygen, occurrence (shielding gas contg. controlled; gas-metal-arc **welding** of high-Cr ferritic steel for **welded** structure having toughness and tensile strength)

IT 7440-37-1, Argon, uses 7440-59-7, Helium, uses (shielding gas; gas-metal-arc **welding** of high-Cr ferritic steel for **welded** structure having toughness and tensile strength)

IT 353743-30-3 353743-31-4 353743-32-5 353743-33-6 353743-34-7
353743-35-8 353743-36-9 353743-37-0 353743-38-1 353743-39-2
353743-40-5 353743-41-6

(wire; gas-metal-arc **welding** of high-Cr ferritic steel for **welded** structure having toughness and tensile strength)

L69 ANSWER 5 OF 21 HCAPLUS COPYRIGHT 2002 ACS

2000:599435 Document No. 133:180848 Gas shielded arc **welding** wire for **welding** of high-Cr ferritic heat-resistant steels. Goto, Akinobu (Kobe Steel, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000233294 A2 20000829, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-34901 19990212.

AB The wires consist of C[✓] 0.02-0.15, Si[✓] 0.10-1.00, Mn[✓] 0.30-1.50, Cu[✓] 0.05-2.0, Ni[✓] 0.05-1.20, Cr[✓] 8-13, Mo[✓] 0.01-1.20, V[✓] 0.03-0.50, Nb[✓] X

0.02-0.15, W 0.8-3.5, N 0.01-0.08, Ti 0.0008-0.09 wt.%, and balance Fe. Optionally, the wires may also contain .ltoreq.0.45 wt.% Co and 0.0005-0.008 wt.% B. The wires have high creep strength and std.-temp. toughness. The wires are esp. suitable for **welding** of steels used for boilers in thermal power plants.

IT 288574-37-8

(iron-chromium-tungsten alloy wires for gas shielded arc **welding** of high-chromium heat-resistant steels for)

RN 288574-37-8 HCAPLUS

CN Iron alloy, base, Fe 75-91, Cr 8-13, W 0.8-3.5, Cu 0-2, Mn 0.3-1.5, Mo 0-1.2, Ni 0-1.2, Si 0.1-1, V 0-0.5, Co 0-0.4, C 0-0.2, Nb 0-0.2, N 0-0.1, Ti 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	75	-	91	7439-89-6
Cr	8	-	13	7440-47-3
W	0.8	-	3.5	7440-33-7
Cu	0	-	2	7440-50-8
Mn	0.3	-	1.5	7439-96-5
Mo	0	-	1.2	7439-98-7
Ni	0	-	1.2	7440-02-0
Si	0.1	-	1	7440-21-3
V	0	-	0.5	7440-62-2
Co	0	-	0.4	7440-48-4
C	0	-	0.2	7440-44-0
Nb	0	-	0.2	7440-03-1
N	0	-	0.1	17778-88-0
Ti	0	-	0.1	7440-32-6

IC ICM B23K035-30

ICS C22C038-00; C22C038-50; C22C038-54

CC 55-3 (Ferrous Metals and Alloys)

ST gas shielded arc **welding** wire; chromium ferritic steel **welding** wire; heat resistant steel **welding** wire; iron chromium tungsten alloy **welding** wire

IT **Welding** of metals

(gas metal-arc, electrodes; iron-chromium-tungsten alloy wires for gas shielded arc **welding** of high-chromium heat-resistant steels for)

IT Boilers

(thermal power plant; iron-chromium-tungsten alloy wires for gas shielded arc **welding** of high-chromium heat-resistant steels for)

IT 288574-32-3 288574-33-4 288574-34-5 288574-35-6 288574-36-7
(iron-chromium-tungsten alloy wires for gas shielded arc **welding** of high-chromium heat-resistant steels)

IT 288574-37-8

(iron-chromium-tungsten alloy wires for gas shielded arc **welding** of high-chromium heat-resistant steels for)

IT 7440-42-8, Boron, uses

(microalloying element; iron-chromium-tungsten alloy wires for gas shielded arc **welding** of high-chromium heat-resistant steels for)

L69 ANSWER 6 OF 21 HCAPLUS COPYRIGHT 2002 ACS

2000:37785 Document No. 132:96227 **Weld** metals for high-Cr ferritic heat-resistant steels. Hatano, Hitoshi; Hata, Hideo; Goto, Akinobu; Nakagawa, Takeshi; Sato, Munenobu (Kobe Steel, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000015480 A2 20000118, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-192029 19980707.

AB The **weld** metals, formed by arc **welding**, comprise Fe alloys contg. C 0.04-0.14, Si 0.05-0.5, Mn 0.3-1.5, Ni 0.3-1.5, Cr 7.0-13.0, Mo 0.05-1.5, V 0.01-0.40, Nb 0.02-0.30, and N 0.02-0.10 wt.% and the **weld** metals after **welding** and stress-relief treatment contain NaCl-type carbonitrides having (Nb)/(V) ≥ 0.15 . Optionally, the metals also contain Ti ≤ 0.05 , W ≤ 2.5 , and/or Co ≤ 2.0 wt.%. The **weld** metals have high creep strength and toughness under high temp.

IT 255048-11-4P

(thermal creep-resistant **weld** metals for high-Cr ferritic heat-resistant steels)

RN 255048-11-4 HCAPLUS

CN Iron alloy, base, Fe 77-92, Cr 7-13, W 0-2.5, Co 0-2, Mn 0.3-1.5, Ni 0.3-1.5, Mo 0-1.5, Si 0-0.5, V 0-0.4, Nb 0-0.3, C 0-0.1, N 0-0.1 (9CI)
(CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	77	-	92	7439-89-6
Cr	7	-	13	7440-47-3
W	0	-	2.5	7440-33-7
Co	0	-	2	7440-48-4
Mn	0.3	-	1.5	7439-96-5
Ni	0.3	-	1.5	7440-02-0
Mo	0	-	1.5	7439-98-7
Si	0	-	0.5	7440-21-3
V	0	-	0.4	7440-62-2
Nb	0	-	0.3	7440-03-1
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0

IC ICM B23K035-30

ICS B23K035-30; C22C038-00; C22C038-48; C22C038-52

CC 55-3 (Ferrous Metals and Alloys)

ST **weld** metal high chromium ferritic steel; niobium vanadium carbonitride control **weld** metal; thermal creep resistance **weld** metal; toughness thermal resistance **weld** metal

IT **Welds**

(thermal creep-resistant **weld** metals for high-Cr

ferritic heat-resistant steels)

IT Carbonitrides
 (weld metals contg.; thermal creep-resistant
 weld metals for high-Cr ferritic heat-resistant steels)

IT 255048-00-1P 255048-01-2P 255048-02-3P 255048-03-4P
 255048-04-5P 255048-05-6P 255048-06-7P 255048-07-8P
 255048-08-9P 255048-09-0P 255048-10-3P 255048-11-4P
 (thermal creep-resistant weld metals for high-Cr
 ferritic heat-resistant steels)

IT 12687-87-5, Niobium carbonitride 37232-24-9, Vanadium carbonitride
 (weld metals contg.; thermal creep-resistant
 weld metals for high-Cr ferritic heat-resistant steels)

IT 11100-60-0, processes 99693-91-1
 (weld metals from; thermal creep-resistant weld
 metals for high-Cr ferritic heat-resistant steels)

L69 ANSWER 7 OF 21 HCAPLUS COPYRIGHT 2002 ACS
 1999:530499 Document No. 131:187923 **Welding** of high-Cr
 ferritic heat-resistant steels and manufacture of steel pipes using
 the method. Hayashi, Kenji; Kojima, Toshifumi; Hayashida, Michio
 (Nippon Kokan Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 11226738
 A2 19990824 Heisei, 12 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 1998-31367 19980213.

AB The title steels contg. C .ltoreq.0.2, Si .ltoreq.0.9, Mn
 .ltoreq.1.5, Cr 8-13, Mo 0.05-1.2, W 0.3-3 (Mo + 1/2W = 0.5-2), Nb
 0.02-0.15, V 0.1-0.4, Cu .ltoreq.2, Ni .ltoreq.1, Co .ltoreq.3, N
 0.02-0.15, B 0.001-0.01, and Ca .ltoreq.0.005 wt.% are
welded with steels contg. C .ltoreq.0.2, Si .ltoreq.0.9, Mn
 .ltoreq.1.5, Cr 8-13, Mo 0.05-1.2, W 0.3-3 (Mo + 1/2W = 0.5-2), Nb
 0.02-0.15, and V 0.1-0.4 wt.%, and the whole or part of the
welded parts are normalized and tempered after the
welding. The steel pipes manufd. by the method mentioned
 above involves the following heat treatment processes: hot bending
 at 1000-1150.degree. and/or normalizing at 1000-1150.degree. and
 tempering at 700.degree.-Ac1 transformation point. The
welded parts have high creep rupture strength and toughness,
 and the steel pipes are esp. useful for thermal power plant.

IT 240431-13-4
 (heat treatment in **welding** of high-Cr ferritic
 heat-resistant steel pipe for creep rupture strength and
 toughness at **welded** part)

RN 240431-13-4 HCAPLUS

CN Iron alloy, base, Fe 73-92, Cr 8-13, W 0.3-3, Co 0-3, Cu 0-2, Mn 0-1.5, Mo
 0-1.2, Ni 0-1, Si 0-0.9, V 0.1-0.4, C 0-0.2, N 0-0.2, Nb 0-0.2 (9CI) (CA
 INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	73 - 92	7439-89-6
Cr	8 - 13	7440-47-3
W	0.3 - 3	7440-33-7

Co	0	-	3	7440-48-4
Cu	0	-	2	7440-50-8
Mn	0	-	1.5	7439-96-5
Mo	0	-	1.2	7439-98-7
Ni	0	-	1	7440-02-0
Si	0	-	0.9	7440-21-3
V	0.1	-	0.4	7440-62-2
C	0	-	0.2	7440-44-0
N	0	-	0.2	17778-88-0
Nb	0	-	0.2	7440-03-1

IC ICM B23K009-23
ICS B21C037-08; B23K009-00; B23K009-167; B23K009-18; B23K031-00;
B23K035-30; C21D009-50; C22C038-00; C22C038-54

CC 55-9 (Ferrous Metals and Alloys)

ST **welding** chromium ferritic heat resistant steel; creep
strength toughness **welding** part steel; normalizing
tempering bending steel pipe

IT Tempering
 Welding of metals
 (heat treatment in **welding** of high-Cr ferritic
 heat-resistant steel pipe for creep rupture strength and
 toughness at **welded** part)

IT Bending
 (hot; heat treatment in **welding** of high-Cr ferritic
 heat-resistant steel pipe for creep rupture strength and
 toughness at **welded** part)

IT Heat treatment
 (normalizing; heat treatment in **welding** of high-Cr
 ferritic heat-resistant steel pipe for creep rupture strength and
 toughness at **welded** part)

IT Pipes and Tubes
 (steel; heat treatment in **welding** of high-Cr ferritic
 heat-resistant steel pipe for creep rupture strength and
 toughness at **welded** part)

IT 240431-02-1 240431-03-2 240431-04-3 240431-05-4 240431-06-5
240431-07-6 240431-08-7 240431-09-8 240431-10-1 240431-11-2
240431-12-3 **240431-13-4** 240431-14-5
 (heat treatment in **welding** of high-Cr ferritic
 heat-resistant steel pipe for creep rupture strength and
 toughness at **welded** part)

IT 7440-42-8, Boron, uses 7440-70-2, Calcium, uses
 (microalloying element; heat treatment in **welding** of
 high-Cr ferritic heat-resistant steel pipe for creep rupture
 strength and toughness at **welded** part)

L69 ANSWER 8 OF 21 HCAPLUS COPYRIGHT 2002 ACS

1999:312869 Document No. 130:355219 High-strength and heat-resistant
steel for turbine rotors having integrated high- and low-pressure
parts. Kakuya, Yoshikuni; Umakoshi, Ryutaro; Kawai, Hisataka
(Mitsubishi Heavy Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho
JP 11131190 A2 19990518 Heisei, 9 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1997-292326/19971024.

AB The title steel contains C 0.05-0.2, Ni .ltoreq.2.5, Cr 8-11, Mo 0.3-2, V 0.1-0.3, N 0.01-0.08, Nb 0.02-0.15, and as impurities Si .ltoreq.0.1, Mn .ltoreq.0.3, P .ltoreq.0.015, and S .ltoreq.0.008 wt.%. Optionally, the steel contains Ta 0.02-0.2, B 0.001-0.03, W 1-2, and/or Co 1-4 wt.%. The turbine rotors are manufd. by following steps; melting, refining, and ingot forming; forging to give rotor body; quenching by heating at 1000-1150.degree.; .gtoreq.1 of tempering at 530.degree.-700.degree.. The turbine rotors use resulting steel pptd. with M23C6-type carbides and intermetallic compds. in grain boundaries and martensite borderline and MX-type carbonitrides in martensite lath. The turbine rotors have good creep strength and toughness.

IT 224642-78-8

(turbine rotors contg. high-strength and heat-resistant chromium steel manufd. by quenching and tempering)

RN 224642-78-8 HCAPLUS

CN Iron alloy, base, Fe 77-92, Cr 8-11, Co 0-4, Ni 0-2.5, Mo 0.3-2, W 0-2, V 0.1-0.3, Mn 0-0.3, C 0-0.2, Nb 0-0.2, Ta 0-0.2, N 0-0.1, Si 0-0.1 (9CI)
(CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	77	-	92	7439-89-6
Cr	8	-	11	7440-47-3
Co	0	-	4	7440-48-4
Ni	0	-	2.5	7440-02-0
Mo	0.3	-	2	7439-98-7
W	0	-	2	7440-33-7
V	0.1	-	0.3	7440-62-2
Mn	0	-	0.3	7439-96-5
C	0	-	0.2	7440-44-0
Nb	0	-	0.2	7440-03-1
Ta	0	-	0.2	7440-25-7
N	0	-	0.1	17778-88-0
Si	0	-	0.1	7440-21-3

IC ICM C22C038-00

ICS C22C038-48; F01D005-28; F01D025-00

CC 55-3 (Ferrous Metals and Alloys)

IT 224642-46-0 224642-48-2 224642-50-6 224642-51-7 224642-52-8
224642-53-9 224642-55-1 224642-57-3 224642-58-4 224642-60-8
224642-61-9 224642-63-1 224642-65-3 224642-66-4 224642-68-6
224642-69-7 224642-70-0 224642-71-1 224642-72-2 224642-73-3
224642-75-5 224642-76-6 224642-78-8

(turbine rotors contg. high-strength and heat-resistant chromium steel manufd. by quenching and tempering)

X L69 ANSWER 9 OF 21 HCAPLUS COPYRIGHT 2002 ACS

1999:156944 Document No. 130:240395 High-chromium ferritic steel.

Ozaki, Seiji; Nishimura, Nobuhiko (Mitsubishi Heavy Industries,

Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 11061342 A2 19990305
Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
1997-214629 19970808.

AB The steel contains C 0.03-0.12, Si 0.1-0.7, Mn 0.1-1.0, P
.ltoreq.0.025, S .ltoreq.0.015, Cr 8-13, Mo 0.1-1.5, W 0.1-3.5, V
0.01-0.3, Nb 0.01-0.2, Co 0.1-3, Cu 0.1-3, Ni 0.1-1, B 0.0005-0.01,
and N 0.01-0.1 wt.% assocd. with, and 0.01-0.5 wt.% Hf, 0.01-0.5
wt.% Zr, 0.01-1.0 wt.% Ta, or 0.01-3 wt.% Os. The creep fracture
resistance at .gtoreq.600.degree. is improved in the materials
without affecting toughness, processability, and **weldability**
and the materials are suitable for boilers, turbines, etc.

IT 221356-14-5 221356-16-7 221356-17-8
221356-18-9

(high-chromium ferritic steel materials with improved creep
resistance at high temp.)

RN 221356-14-5 HCAPLUS

CN Iron alloy, base, Fe 72-91, Cr 8-13, W 0.1-3.5, Co 0.1-3, Cu 0.1-3, Mo
0.1-1.5, Mn 0.1-1, Ni 0.1-1, Si 0.1-0.7, Hf 0-0.5, V 0-0.3, Nb 0-0.2, C
0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	72 - 91	7439-89-6
Cr	8 - 13	7440-47-3
W	0.1 - 3.5	7440-33-7
Co	0.1 - 3	7440-48-4
Cu	0.1 - 3	7440-50-8
Mo	0.1 - 1.5	7439-98-7
Mn	0.1 - 1	7439-96-5
Ni	0.1 - 1	7440-02-0
Si	0.1 - 0.7	7440-21-3
Hf	0 - 0.5	7440-58-6
V	0 - 0.3	7440-62-2
Nb	0 - 0.2	7440-03-1
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

RN 221356-16-7 HCAPLUS

CN Iron alloy, base, Fe 73-91, Cr 8-13, W 0.1-3.5, Co 0.1-3, Cu 0.1-3, Mo
0.1-1.5, Mn 0.1-1, Ni 0.1-1, Si 0.1-0.7, V 0-0.3, Nb 0-0.2, C 0-0.1, N
0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	73 - 91	7439-89-6
Cr	8 - 13	7440-47-3
W	0.1 - 3.5	7440-33-7
Co	0.1 - 3	7440-48-4
Cu	0.1 - 3	7440-50-8
Mo	0.1 - 1.5	7439-98-7

Mn	0.1	-	1	7439-96-5
Ni	0.1	-	1	7440-02-0
Si	0.1	-	0.7	7440-21-3
V	0	-	0.3	7440-62-2
Nb	0	-	0.2	7440-03-1
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0

RN 221356-17-8 HCAPLUS

CN Iron alloy, base, Fe 72-91, Cr 8-13, W 0.1-3.5, Co 0.1-3, Cu 0.1-3, Mo 0.1-1.5, Mn 0.1-1, Ni 0.1-1, Ta 0-1, Si 0.1-0.7, V 0-0.3, Nb 0-0.2, C 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	72 - 91	7439-89-6
Cr	8 - 13	7440-47-3
W	0.1 - 3.5	7440-33-7
Co	0.1 - 3	7440-48-4
Cu	0.1 - 3	7440-50-8
Mo	0.1 - 1.5	7439-98-7
Mn	0.1 - 1	7439-96-5
Ni	0.1 - 1	7440-02-0
Ta	0 - 1	7440-25-7
Si	0.1 - 0.7	7440-21-3
V	0 - 0.3	7440-62-2
Nb	0 - 0.2	7440-03-1
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

RN 221356-18-9 HCAPLUS

CN Iron alloy, base, Fe 70-91, Cr 8-13, W 0.1-3.5, Co 0.1-3, Cu 0.1-3, Os 0-3, Mo 0.1-1.5, Mn 0.1-1, Ni 0.1-1, Si 0.1-0.7, V 0-0.3, Nb 0-0.2, C 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	70 - 91	7439-89-6
Cr	8 - 13	7440-47-3
W	0.1 - 3.5	7440-33-7
Co	0.1 - 3	7440-48-4
Cu	0.1 - 3	7440-50-8
Os	0 - 3	7440-04-2
Mo	0.1 - 1.5	7439-98-7
Mn	0.1 - 1	7439-96-5
Ni	0.1 - 1	7440-02-0
Si	0.1 - 0.7	7440-21-3
V	0 - 0.3	7440-62-2
Nb	0 - 0.2	7440-03-1
C	0 - 0.1	7440-44-0

N 0 - 0.1 17778-88-0

IC ICM C22C038-00

ICS C22C038-54

CC 55-3 (Ferrous Metals and Alloys)

IT 221355-40-4 221355-46-0 221355-50-6 221355-54-0 221355-57-3
 221355-61-9 221355-63-1 221355-67-5 221355-70-0 221355-72-2
 221355-73-3 221355-74-4 221355-75-5 221355-76-6 221355-78-8
 221355-79-9 221355-80-2 221355-81-3 221355-82-4 221355-83-5
 221355-84-6 221355-85-7 221355-86-8 221355-87-9 221355-89-1
 221355-91-5 221355-92-6 221355-93-7 221355-94-8 221355-95-9
 221355-96-0 221355-97-1 221355-98-2 221355-99-3 221356-00-9
 221356-01-0 221356-02-1 221356-03-2 221356-04-3 221356-05-4
 221356-06-5 221356-07-6 221356-08-7 221356-09-8 221356-10-1
 221356-11-2 221356-12-3 221356-13-4 **221356-14-5**
221356-16-7 221356-17-8 221356-18-9

(high-chromium ferritic steel materials with improved creep
 resistance at high temp.)

L69 ANSWER 10 OF 21 HCAPLUS COPYRIGHT 2002 ACS

1998:62574 Document No. 128:143642 Turbine shaft from two adjoining
 stainless steel parts. Kern, Torsten-Ulf; Ewald, Juergen (Siemens
 A.-G., Germany). Ger. Offen. DE 19628506 A1 19980122, 8 pp.
 (German). CODEN: GWXXBX. APPLICATION: DE 1996-19628506 19960715.

AB The shaft and esp. the shaft of a gas turbine has a 1st region with
 a max. diam. r and an adjoining 2nd region with a max. diam. r1 >r.
 The 1st region is made of a steel for operation at >550.degree., and
 the 2nd region is made of a steel for operation at <550.degree..
 The steels used for the 1st and 2nd region contain 8-12.5 Cr and
 0.1-1.8% Ni, and they have substantially equal austenitizing temps.
 The Ni content of the steel of the 2nd region is by .gtoreq.0.1%
 higher than that of the steel of the 1st region.

IT 202339-02-4

(turbine shaft)

RN 202339-02-4 HCAPLUS

CN Iron alloy, base, Fe 80-90, Cr 10-12, W 0-2.7, Co 0-2.6, Mn 0-0.7, Ni
 0.2-0.6, Mo 0-0.5, V 0.1-0.3, C 0-0.2, Nb 0-0.2, Si 0-0.2, N 0-0.1 (9CI)
 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	80 - 90	7439-89-6
Cr	10 - 12	7440-47-3
W	0 - 2.7	7440-33-7
Co	0 - 2.6	7440-48-4
Mn	0 - 0.7	7439-96-5
Ni	0.2 - 0.6	7440-02-0
Mo	0 - 0.5	7439-98-7
V	0.1 - 0.3	7440-62-2
C	0 - 0.2	7440-44-0
Nb	0 - 0.2	7440-03-1

Si	0	-	0.2	7440-21-3
N	0	-	0.1	17778-88-0

IC ICM C22C038-18
ICS C22C038-40; C22C038-48; F01D005-06
CC 55-3 (Ferrous Metals and Alloys)
IT 202338-73-6 202338-75-8 202338-78-1 202338-82-7 202338-85-0
202338-90-7 202338-94-1 202338-98-5 202339-02-4
202339-07-9
(turbine shaft)

L69 ANSWER 11 OF 21 HCAPLUS COPYRIGHT 2002 ACS
1997:762262 Document No. 128:78256 **Welding** material for
high-chromium ferrite-type heat-resistant steel. Morimoto, Hiroshi;
Okita, Shigeru (Nippon Steel Corp., Japan). Jpn. Kokai Tokkyo Koho
JP 09308989 A2 19971202 Heisei, 11 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1996-146520 19960517.

AB The Fe alloy material contains C 0.04-0.12, Si 0.01-0.45, Mn
0.3-1.5, Cr 8-13, Ni 0.01-1.0, Co 0.5-5.0, Mo 0.05-2.0, W 1.5-3.0, V
0.03-0.50, Nb 0.01-0.15, Ta 0.01-0.15, and N 0.01-0.08 wt.% which
satisfy following equations (element symbols represent wt.% of the
element): $0.20 \leq \frac{Mo + W}{Ni + Co} \leq 2.0$, $0.4 \leq \frac{(0.5 \times Co + 0.5 \times Mn + Ni)}{Cr + 6 \times Si + 4 \times Mo + 1.5 \times W + 11 \times V + 5 \times Nb - 40 \times C - 30 \times N - 4 \times Ni - 2 \times Mn - 2 \times Co} \leq 3.5$, and $E = 3-9.5$ (E
= equiv of Cr; the definition is $E = Cr + 6 \times Si + 4 \times Mo + 1.5 \times W + 11 \times V + 5 \times Nb - 40 \times C - 30 \times N - 4 \times Ni - 2 \times Mn - 2 \times Co$). The
welding material showing good creep strength at high temp.,
which provide **welded** metal having toughness and crack
resistance even after aging, is useful for energy plant of high
temp. and high efficiency.

IT 200807-70-1
(iron-based **welding** material for high-chromium
ferrite-type heat-resistant steel)

RN 200807-70-1 HCAPLUS

CN Iron alloy, base, Fe 73-90, Cr 8-13, Co 0.5-5, W 1.5-3, Mo 0-2, Mn
0.3-1.5, Ni 0-1, V 0-0.5, Si 0-0.4, Nb 0-0.2, Ta 0-0.2, C 0-0.1, N 0-0.1
(9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	73 - 90	7439-89-6
Cr	8 - 13	7440-47-3
Co	0.5 - 5	7440-48-4
W	1.5 - 3	7440-33-7
Mo	0 - 2	7439-98-7
Mn	0.3 - 1.5	7439-96-5
Ni	0 - 1	7440-02-0
V	0 - 0.5	7440-62-2
Si	0 - 0.4	7440-21-3
Nb	0 - 0.2	7440-03-1
Ta	0 - 0.2	7440-25-7

C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0

IC ICM B23K035-30
ICS C22C038-00; C22C038-52; C22C038-54

CC 55-9 (Ferrous Metals and Alloys)

ST iron based **welding** material steel; heat resistant steel
welding material; high chromium ferrite steel
welding material; creep strength **welding** material
steel; toughness crack resistance **welding** material steel

IT Heat-resistant materials
 Welding of metals
 (iron-based **welding** material for high-chromium
 ferrite-type heat-resistant steel)

IT 12597-69-2, Steel, miscellaneous
 (high-chromium; iron-based **welding** material for
 high-chromium ferrite-type heat-resistant steel)

IT 200807-54-1 200807-55-2 200807-56-3 200807-57-4 200807-58-5
 200807-59-6 200807-60-9 200807-61-0 200807-62-1 200807-63-2
 200807-64-3 200807-65-4 200807-66-5 200807-68-7 200807-69-8
 200807-70-1
 (iron-based **welding** material for high-chromium
 ferrite-type heat-resistant steel)

Done
NB 7
L69 ANSWER 12 OF 21 HCAPLUS COPYRIGHT 2002 ACS
1997:732420 Document No. 128:51316 Manufacture of high Cr ferritic
heat-resistant steel for boiler tubes. Okami, Masahiro; Hasegawa,
Yasushi (Nippon Steel Corp., Japan). Jpn. Kokai Tokkyo Koho JP
09291308 A2 19971111 Heisei, 7 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1996-104887 19960425.

AB Steel contg. C 0.01-0.15, Si 0.01-0.80, Mn 0.05-1.50, Cr 8.00-13.00,
Mo 0.05-1.50, W 0.05-4.00, V 0.05-0.50, Nb 0.02-0.15, Al
0.002-0.050, N 0.010-0.110, P .ltoreq.0.030, S .ltoreq.0.010, O
.ltoreq.0.015, and Ni 0.01-3.00, Co 0.01-5.00, and/or Cu 0.01-5.00
wt.% satisfying Cr-2Ni-2Co-Cu .ltoreq. 9 and Ni/59 + Co/59 + N/(Nb +
V) .gtoreq. Mo/96 + W/184 is hot worked, normalized from (Ac3 +
50.degree.), intermediately heated at .gtoreq.Ac1 and .ltoreq.(Ac1 +
40.degree.), and tempered at 650-730.degree.. Also claimed process
uses steel contg. B. The products have good creep rupture
resistance and toughness at high temp.

IT 183311-07-1
 (high Cr ferritic heat-resistant steel manuf. by heat treatment
 for boiler tubes)

RN 183311-07-1 HCAPLUS

CN Iron alloy, base, Fe 65-92, Cr 8-13, Co 0-5, Cu 0-5, W 0-4, Ni 0-3, Mn
0-1.5, Mo 0-1.5, Si 0-0.8, V 0-0.5, C 0-0.2, Nb 0-0.2, N 0-0.1 (9CI) (CA
INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	65 - 92	7439-89-6

Cr	8	-	13	7440-47-3
Co	0	-	5	7440-48-4
Cu	0	-	5	7440-50-8
W	0	-	4	7440-33-7
Ni	0	-	3	7440-02-0
Mn	0	-	1.5	7439-96-5
Mo	0	-	1.5	7439-98-7
Si	0	-	0.8	7440-21-3
V	0	-	0.5	7440-62-2
C	0	-	0.2	7440-44-0
Nb	0	-	0.2	7440-03-1
N	0	-	0.1	17778-88-0

IC ICM C21D006-00
 ICS C21D008-00; C22C038-00; C22C038-52; C22C038-54
 CC 55-5 (Ferrous Metals and Alloys)
 IT **183311-07-1** 200119-51-3 200119-52-4 200119-53-5
 200119-54-6 200119-55-7 200119-56-8 200119-57-9
 (high Cr ferritic heat-resistant steel manuf. by heat treatment
 for boiler tubes)

L69 ANSWER 13 OF 21 HCAPLUS COPYRIGHT 2002 ACS

1997:718239 Document No. 128:37855 Rotor shaft for ultra supercritical
 pressure steam turbine, steam turbine, and power plant. Shimizu,
 Nobuo; Hiraga, Ryo (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho
 JP 09287402 A2 19971104 Heisei, 30 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 1996-99834 19960422.

AB In the rotor shaft of the steam turbine the rotor journal and the
 low-temp. part are made of a martensitic steel (I), whereas the
 rotor body is made of a martensitic steel (II) having a high-temp.
 strength higher and **weldability** lower than the martensitic
 steel I: I contg. C 0.06-0.14, Si .ltoreq.0.5, Mn .ltoreq.2, Cr
 7-12, Ni 0.1-1.0, V 0.05-0.3, Nb 0.01-0.20, N 0.005-0.1, Mo
 .ltoreq.3.5, W .ltoreq.3.5, B 0 or .ltoreq.0.15, and Co 1-10 wt.%
 and II contg. C 0.06-0.14, Si .ltoreq.0.15, Mn .ltoreq.1, Cr 8-12,
 Ni 0.1-1.0, V 0.05-0.3, Nb 0.01-0.20, N 0.005-0.1, Mo >0.5 and
 .ltoreq.3.5, W .ltoreq.3.5, B 0.005-0.03, and Co 1-10 wt.%. The
 steam turbine and the steam turbine power plant are also claimed.
 The steam turbine has heat resistance (to steam temp.
 600-660.degree.), high thermal efficiency, and small size.

IT **199798-85-1**
 (rotor journals and low-temp. parts; rotor shafts for ultra
 supercrit. pressure steam turbines for power plants)

RN 199798-85-1 HCAPLUS

CN Iron alloy, base, Fe 67-92, Cr 7-12, Co 1-10, Mo 0-3.5, W 0-3.5, Mn
 0-2, Ni 0.1-1, Si 0-0.5, V 0-0.3, Nb 0-0.2, C 0-0.1, N 0-0.1 (9CI) (CA
 INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	67 - 92	7439-89-6

Cr	7	-	12	7440-47-3
Co	1	-	10	7440-48-4
Mo	0	-	3.5	7439-98-7
W	0	-	3.5	7440-33-7
Mn	0	-	2	7439-96-5
Ni	0.1	-	1	7440-02-0
Si	0	-	0.5	7440-21-3
V	0	-	0.3	7440-62-2
Nb	0	-	0.2	7440-03-1
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0

IC ICM F01D005-06
 ICS C22C038-00; C22C038-48; C22C038-54; F01D001-04; F01D005-28
 CC 55-3 (Ferrous Metals and Alloys)
 IT **199798-85-1**

(rotor journals and low-temp. parts; rotor shafts for ultra
 supercrit. pressure steam turbines for power plants)

L69 ANSWER 14 OF 21 HCAPLUS COPYRIGHT 2002 ACS

1997:297004 Document No. 126:280986 High-chromium ferritic steel
 having improved thermal strength. Komai, Nobuyoshi; Masuyama,
 Fujimitsu; Yokoyama, Tomomitsu (Mitsubishi Heavy Ind Ltd, Japan).
 Jpn. Kokai Tokkyo Koho JP 09059746 A2 19970304 Heisei, 4 pp.
 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-212066 19950821.

AB The steel contains C 0.03-0.12, Si 0.1-0.7, Mn 0.1-1, P 0.002-0.025,
 S 0.001-0.015, Cr 8-13, Ni 0.1-1, Mo 0.1-3, V 0.01-0.5, W 0.1-3, Nb
 0.01-0.2, Co 0.1-3, Re 0.1-1.5, Al 0.005-0.05, B 0.0001-0.01, N
 0.005-0.07, and Cu 0.01-1%. The steel has improved creep rupture
 strength at .gtoreq.600.degree..

IT **188917-15-9**
 (high-chromium ferritic steel having improved thermal strength)

RN 188917-15-9 HCAPLUS

CN Iron alloy, base, Fe 72-91, Cr 8-13, Co 0.1-3, Mo 0.1-3, W 0.1-3, Re
 0.1-1.5, Mn 0.1-1, Ni 0.1-1, Cu 0-1, Si 0.1-0.7, V 0-0.5, Nb 0-0.2, C
 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	72 - 91	7439-89-6
Cr	8 - 13	7440-47-3
Co	0.1 - 3	7440-48-4
Mo	0.1 - 3	7439-98-7
W	0.1 - 3	7440-33-7
Re	0.1 - 1.5	7440-15-5
Mn	0.1 - 1	7439-96-5
Ni	0.1 - 1	7440-02-0
Cu	0 - 1	7440-50-8
Si	0.1 - 0.7	7440-21-3
V	0 - 0.5	7440-62-2
Nb	0 - 0.2	7440-03-1

C 0 - 0.1 7440-44-0
N 0 - 0.1 17778-88-0

IC ICM C22C038-00
ICS C22C038-54; F28F021-08
CC 55-3 (Ferrous Metals and Alloys)
IT 188916-91-8 188916-93-0 188916-95-2 188916-97-4 188916-99-6
188917-01-3 188917-03-5 188917-05-7 188917-07-9 188917-09-1
188917-11-5 188917-13-7 **188917-15-9**
(high-chromium ferritic steel having improved thermal strength)

L69 ANSWER 15 OF 21 HCAPLUS COPYRIGHT 2002 ACS

1996:693751 Document No. 125:305926 Manufacture of heat-resistant martensitic steel having high-temperature creep strength. Hasegawa, Hiroshi; Ookami, Masahiro; Naoi, Hisashi; Fujita, Toshio (Shinnippon Seitetsu Kk, Japan; Fujita Toshio). Jpn. Kokai Tokkyo Koho JP 08225833 A2 19960903 Heisei, 13 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-28518 19950216.

AB The process comprises primary tempering steel contg. C 0.01-0.30, Si 0.01-0.80, Mn 0.20-1.50, Cr 8.00-13.00, Mo 0.01-3.00, W 0.10-5.00, Co 0.05-6.00, V 0.002-0.800, Nb 0.002-0.500, N 0.002-0.150, P 0-0.030, S 0-0.010, O .ltoreq.0.020, Ni 0.10-2.00, Cu 0.10-2.00, and/or B 0.0005-0.01% at 600-650.degree. for .gtoreq.10 min after austenitic normalizing, and then secondary tempering the steel at 750-800.degree. for .gtoreq.10 min.

IT **183321-21-3**
(dual-stage tempering in manuf. of heat-resistant martensitic steel having high-temp. creep strength)

RN 183321-21-3 HCAPLUS

CN Iron alloy, base, Fe 65-92, Cr 8-13, Co 0-6, W 0.1-5, Mo 0-3, Cu 0.1-2, Ni 0.1-2, Mn 0.2-1.5, Si 0-0.8, V 0-0.8, Nb 0-0.5, C 0-0.3, N 0-0.2 (9CI)
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	65 - 92	7439-89-6
Cr	8 - 13	7440-47-3
Co	0 - 6	7440-48-4
W	0.1 - 5	7440-33-7
Mo	0 - 3	7439-98-7
Cu	0.1 - 2	7440-50-8
Ni	0.1 - 2	7440-02-0
Mn	0.2 - 1.5	7439-96-5
Si	0 - 0.8	7440-21-3
V	0 - 0.8	7440-62-2
Nb	0 - 0.5	7440-03-1
C	0 - 0.3	7440-44-0
N	0 - 0.2	17778-88-0

IC ICM C21D006-00
ICS C22C038-00; C22C038-30; C22C038-54

CC 55-5 (Ferrous Metals and Alloys)
 IT 183319-47-3 183319-49-5 183319-52-0 183319-55-3 183319-58-6
 183319-61-1 183319-64-4 183319-67-7 183319-70-2 183319-73-5
 183319-76-8 183319-79-1 183319-82-6 183319-86-0 183319-90-6
 183319-94-0 183319-97-3 183320-01-6 183320-05-0 183320-09-4
 183320-13-0 183320-16-3 183320-21-0 183320-26-5 183320-36-7
 183320-41-4 183320-46-9 183320-49-2 183320-53-8 183320-57-2
 183320-61-8 183320-64-1 183320-68-5 183320-71-0 183320-75-4
 183320-79-8 183320-83-4 183320-87-8 183320-90-3 183320-94-7
 183320-97-0 183320-99-2 183321-01-9 183321-03-1 183321-05-3
 183321-07-5 183321-09-7 183321-15-5 183321-17-7 183321-19-9
183321-21-3

(dual-stage tempering in manuf. of heat-resistant martensitic steel having high-temp. creep strength)

X L69 ANSWER 16 OF 21 HCAPLUS COPYRIGHT 2002 ACS

1996:689162 Document No. 125:305918 Method for heat treatment of ferritic heat-resistant steel. Ookami, Masahiro; Hasegawa, Hiroshi; Naoi, Hisashi (Shinnippon Seitetsu Kk, Japan). Jpn. Kokai Tokkyo Koho JP 08225832 A2 19960903 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-26975 19950215.

AB A method is claimed for heat treatment of steel for tubes which must have high toughness and good creep fracture characteristic at high temp. The steel contains C 0.01-0.15, Si 0.01-0.80, Mn 0.05-1.50, Cr 8.00-13.00, Mo 0.05-1.50, W 0.05-4.00, V 0.05-0.50, Nb 0.02-0.15, N 0.010-0.110, Al 0.002-0.050, P .ltoreq.0.030, S .ltoreq.0.010, O .ltoreq.0.015, Ni 0.01-3.00, Co 0.01-5.00, and Cu 0.01-5.00%. The steel is hot rolled, normalized by cooling from (Ac3 + 50.degree.)-500.degree. to room temp. at .gtoreq.1.degree., reheating, holding at Ac3-(Ac3 + 50.degree.), heating to (Ac3 + 140.degree.)-1150.degree. at .gtoreq.2.degree./min, holding, and cooling from (Ac3 + 50.degree.)-500.degree. to room temp. at .gtoreq.1.degree., and tempered at (Ac1 - 100.degree.)-Ac1.

IT **183311-07-1**

(method for heat treatment of ferritic heat-resistant steel for high toughness and good creep fracture characteristic)

RN 183311-07-1 HCAPLUS

CN Iron alloy, base, Fe 65-92, Cr 8-13, Co 0-5, Cu 0-5, W 0-4, Ni 0-3, Mn 0-1.5, Mo 0-1.5, Si 0-0.8, V 0-0.5, C 0-0.2, Nb 0-0.2, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	65 - 92	7439-89-6
Cr	8 - 13	7440-47-3
Co	0 - 5	7440-48-4
Cu	0 - 5	7440-50-8
W	0 - 4	7440-33-7
Ni	0 - 3	7440-02-0
Mn	0 - 1.5	7439-96-5
Mo	0 - 1.5	7439-98-7

Si	0	-	0.8	7440-21-3
V	0	-	0.5	7440-62-2
C	0	-	0.2	7440-44-0
Nb	0	-	0.2	7440-03-1
N	0	-	0.1	17778-88-0

IC ICM C21D006-00

ICS C21D008-00; C22C038-00; C22C038-26; C22C038-52

CC 55-5 (Ferrous Metals and Alloys)

IT 183310-98-7 183310-99-8 183311-00-4 183311-01-5 183311-02-6

183311-03-7 183311-04-8 183311-05-9 183311-06-0

183311-07-1

(method for heat treatment of ferritic heat-resistant steel for high toughness and good creep fracture characteristic)

X L69 ANSWER 17 OF 21 HCAPLUS COPYRIGHT 2002 ACS

1996:601264 Document No. 125:227654 **Welding** material for heat-resistant high-chromium ferritic steel. Morimoto, Yutaka; Hasegawa, Hiroshi; Ookita, Shigeru; Yurioka, Nobutaka (Shinnippon Seitetsu Kk, Japan). Jpn. Kokai Tokkyo Koho JP 08187592 A2 19960723 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-1386 19950109.

AB The material consists of steel contg. C 0.03-0.12, Si 0.01-0.45, Mn 0.3-1.5, Cr 8-13, Ni 0.01-1.5, Co 0.5-5.0, Mo 0.01-0.3, W 0.5-3.5, V 0.03-0.40, Nb 0.01-0.15, N 0.01-0.08, optionally Cu 0.01-4.0, and, preferably, B 0.00005-0.006% and having (Mo + W)/(Ni + Co + Cu) = 0.045-2.0. The material gives **welds** with high creep rupture strength, toughness, and crack resistance at high temp.

IT 181702-16-9 181702-18-1

(**welding** material for heat-resistant high-chromium ferritic steel)

RN 181702-16-9 HCAPLUS

CN Iron alloy, base, Fe 74-91, Cr 8-13, Co 0.5-5, W 0.5-3.5, Mn 0.3-1.5, Ni 0-1.5, Si 0-0.4, V 0-0.4, Mo 0-0.3, Nb 0-0.2, C 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	74 - 91	7439-89-6
Cr	8 - 13	7440-47-3
Co	0.5 - 5	7440-48-4
W	0.5 - 3.5	7440-33-7
Mn	0.3 - 1.5	7439-96-5
Ni	0 - 1.5	7440-02-0
Si	0 - 0.4	7440-21-3
V	0 - 0.4	7440-62-2
Mo	0 - 0.3	7439-98-7
Nb	0 - 0.2	7440-03-1
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

RN 181702-18-1 HCAPLUS
 CN Iron alloy, base, Fe 70-91, Cr 8-13, Co 0.5-5, Cu 0-4, W 0.5-3.5, Mn
 0.3-1.5, Ni 0-1.5, Si 0-0.4, V 0-0.4, Mo 0-0.3, Nb 0-0.2, C 0-0.1, N 0-0.1
 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	70 - 91	7439-89-6
Cr	8 - 13	7440-47-3
Co	0.5 - 5	7440-48-4
Cu	0 - 4	7440-50-8
W	0.5 - 3.5	7440-33-7
Mn	0.3 - 1.5	7439-96-5
Ni	0 - 1.5	7440-02-0
Si	0 - 0.4	7440-21-3
V	0 - 0.4	7440-62-2
Mo	0 - 0.3	7439-98-7
Nb	0 - 0.2	7440-03-1
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

IC ICM B23K035-30
 ICS C22C038-00; C22C038-52
 CC 55-9 (Ferrous Metals and Alloys)
 ST **welding** heat resistant chromium ferritic steel
 IT **Welding**
 (electrodes, **welding** material for heat-resistant
 high-chromium ferritic steel)
 IT 181701-99-5 181702-04-5 181702-07-8 181702-08-9 181702-11-4
 181702-12-5 181702-13-6 181702-14-7 **181702-16-9**
181702-18-1
 (**welding** material for heat-resistant high-chromium
 ferritic steel)
 IT 181702-20-5 181702-21-6
 (**welding** of; **welding** material for
 heat-resistant high-chromium ferritic steel)

L69 ANSWER 18 OF 21 HCAPLUS COPYRIGHT 2002 ACS
 1995:780666 Document No. 123:205526 Flux-coated electrodes for
welding of ferritic heat-resistant Cr steels. Aoyama,
 Junichi; Yamane, Kunihide; Nagano, Isao (Shinnippon Seitetsu Kk,
 Japan). Jpn. Kokai Tokkyo Koho JP 07155988 A2 19950620 Heisei, 6
 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-339080
 19931203.

AB The Cr steels for arc-**welding** electrodes contain C
 0.01-0.12, Si 0.3-2.4, Mn 0.3-1.9, Cr 5.8-13.0, V 0.03-0.40, Nb
 0.01-0.15, N 0.01-0.08, Ni 0.05-1.2, Mo 0.3-1.6, W 0.5-3.5, Co
 1.0-5.0, and Ta 0.01-3.0%. The electrodes are precoated with 22-40%
 flux mixt. elec.-arc stabilizer, slag formers, and binders, and give
 the **welded** parts showing high-temp. creep strength,
 toughness, and crack resistance.

IT 167940-69-4

(welding electrodes; flux-coated electrodes for
welding of ferritic heat-resistant Cr steels)

RN 167940-69-4 HCAPLUS

CN Iron alloy, base, Fe 68-92, Cr 5.8-13, Co 1-5, W 0.5-3.5, Ta 0-3, Si
0.3-2.4, Mn 0.3-1.9, Mo 0.3-1.6, Ni 0-1.2, V 0-0.4, Nb 0-0.2, C 0-0.1, N
0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	68 - 92	7439-89-6
Cr	5.8 - 13	7440-47-3
Co	1 - 5	7440-48-4
W	0.5 - 3.5	7440-33-7
Ta	0 - 3	7440-25-7
Si	0.3 - 2.4	7440-21-3
Mn	0.3 - 1.9	7439-96-5
Mo	0.3 - 1.6	7439-98-7
Ni	0 - 1.2	7440-02-0
V	0 - 0.4	7440-62-2
Nb	0 - 0.2	7440-03-1
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

IC ICM B23K035-365

ICS B23K035-30; C22C038-00; C22C038-52

CC 55-9 (Ferrous Metals and Alloys)

ST chromium steel **welding** electrode flux coating; ferritic
steel **welding** electrode flux coatingIT **Welding**(shielded metal-arc, electrodes, of ferritic steels; flux-coated
electrodes for **welding** of ferritic heat-resistant Cr
steels)IT 471-34-1, Calcium carbonate, uses 513-77-9, Barium carbonate
1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7787-32-8,
Barium fluoride 7789-75-5, Calcium fluoride, uses 13463-67-7,
Titania, uses(flux contg.; flux-coated electrodes for **welding** of
ferritic heat-resistant Cr steels)IT 167636-51-3 167636-52-4 167636-53-5 167636-54-6 167636-55-7
167636-56-8 167636-57-9 167636-58-0 167636-59-1 167636-60-4
167636-61-5 167636-62-6 167636-63-7 **167940-69-4**(welding electrodes; flux-coated electrodes for
welding of ferritic heat-resistant Cr steels)

L69 ANSWER 19 OF 21 HCAPLUS COPYRIGHT 2002 ACS

1995:643374 Document No. 123:38250 **Welding** wires for
high-chromium ferritic heat-resistant steel. Koyama, Hiroshi;
Umazume, Fumito; Hirano, Akira (Shinnippon Seitetsu Kk, Japan).
Jpn. Kokai Tokkyo Koho JP 07080680 A2 19950328 Heisei, 6 pp.
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-250955 19930914.

AB The title **welding** wires contain C 0.03-0.12, Si 0.02-0.3, Mn 0.3-1.5, V 0.03-0.4, Nb 0.01-0.15, N 0.01-0.08, Cr 8-13, Ni 0.05-1.2, Mo 0.3-1.6, W 0.5-3.5, Co 1.0-5.0% with (Mo+W)/(Ni+Co) .1toreq.1.5 and balance Fe. **Weld** metals having high toughness, high-temp. creep property, and crack resistance are obtained.

IT 164383-42-0
(**Welding** wires for high-chromium ferritic heat-resistant steel)

RN 164383-42-0 HCAPLUS

CN Iron alloy, base, Fe 73-90, Cr 8-13, Co 1-5, W 0.5-3.5, Mo 0.3-1.6, Mn 0.3-1.5, Ni 0-1.2, V 0-0.4, Si 0-0.3, Nb 0-0.2, C 0-0.1, N 0-0.1 (9CI)
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====		
Fe	73 - 90	7439-89-6
Cr	8 - 13	7440-47-3
Co	1 - 5	7440-48-4
W	0.5 - 3.5	7440-33-7
Mo	0.3 - 1.6	7439-98-7
Mn	0.3 - 1.5	7439-96-5
Ni	0 - 1.2	7440-02-0
V	0 - 0.4	7440-62-2
Si	0 - 0.3	7440-21-3
Nb	0 - 0.2	7440-03-1
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

IC ICM B23K035-30

CC 55-9 (Ferrous Metals and Alloys)

ST iron alloy **welding** wire steel

IT **Welding**
(**Welding** wires for high-chromium ferritic heat-resistant steel)

IT 150936-62-2 150936-64-4 150936-65-5 150936-66-6 150936-67-7
150936-68-8 150936-69-9 150936-70-2 164258-62-2
164383-42-0
(**Welding** wires for high-chromium ferritic heat-resistant steel)

IT 12597-69-2, Steel, processes
(high-Cr, ferritic; **Welding** wires for high-chromium ferritic heat-resistant steel)

L69 ANSWER 20 OF 21 HCAPLUS COPYRIGHT 2002 ACS
1995:324700 Document No. 122:139380 Flux-coated arc **welding**
electrodes for **welding** of high-chromium ferritic
heat-resistant steels. Yamane, Kunihide; Nagano, Isao; Aoyama,
Junichi (Shinnippon Seitetsu Kk, Japan). Jpn. Kokai Tokkyo Koho JP
06262388 A2 19940920 Heisei, 7 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1993-75056 19930310.

AB The title **welding** electrodes comprise core wires contg. C 0.01-0.12, Si 0.3-2.4, Mn 0.3-1.9, V 0.03-0.40, Nb 0.01-0.15, N 0.01-0.08, Cr 5.8-13, Ni 0.05-1.2, Mo 0.3-1.6, W 0.5-3.5, Co 1.0-5.0, Cu 0.5-4.0, B 0.001-0.05% and balance Fe, and flux coatings contg. metal carbonates(s), metal fluoride(s), arc stabilizer(s), slag-forming agent(s), deoxidant(s) and binder(s), and have coating ratio (the ratio of coating wt. to total wt. of **welding** electrode) 25-35 wt.%. Optionally, a part or all of the above stated alloying elements C, Si, Mn, V, Nb, N, Cr, Ni, Mo, W, Co, Cu and B can be contained in the coatings instead of that in the core wires.

IT 152318-58-6

(core wires; Flux-coated arc **welding** electrodes for **welding** of high-chromium ferritic heat-resistant steels)

RN 152318-58-6 HCAPLUS

CN Iron alloy, base, Fe 67-91, Cr 5.8-13, Co 1-5, Cu 0.5-4, W 0.5-3.5, Si 0.3-2.4, Mn 0.3-1.9, Mo 0.3-1.6, Ni 0-1.2, V 0-0.4, Nb 0-0.2, C 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	67	-	91	7439-89-6
Cr	5.8	-	13	7440-47-3
Co	1	-	5	7440-48-4
Cu	0.5	-	4	7440-50-8
W	0.5	-	3.5	7440-33-7
Si	0.3	-	2.4	7440-21-3
Mn	0.3	-	1.9	7439-96-5
Mo	0.3	-	1.6	7439-98-7
Ni	0	-	1.2	7440-02-0
V	0	-	0.4	7440-62-2
Nb	0	-	0.2	7440-03-1
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0

IC ICM B23K035-30

CC 55-9 (Ferrous Metals and Alloys)

ST flux coated arc **welding** electrodes; high chromium ferritic steel **welding** electrode

IT **Welding**

(arc, electrodes, flux-coated; flux-coated arc **welding** electrodes for **welding** of high-chromium ferritic heat-resistant steels)

IT 152318-58-6

(core wires; Flux-coated arc **welding** electrodes for **welding** of high-chromium ferritic heat-resistant steels)

IT 160590-82-9 160590-83-0 160590-84-1 160590-85-2 160590-86-3
160590-87-4 160590-88-5 160590-89-6 160590-90-9 160590-91-0

(core wires; flux-coated arc **welding** electrodes for **welding** of high-chromium ferritic heat-resistant steels)

IT 11100-60-0, processes 12604-41-0 66020-71-1, 9Cr1MoNbVW

152653-90-2, 9Cr0.5MoNbVW 161135-27-9
 (ferritic, substrates; flux-coated arc **welding**
 electrodes for **welding** of high-chromium ferritic
 heat-resistant steels)

L69 ANSWER 21 OF 21 HCAPLUS COPYRIGHT 2002 ACS

1994:83001 Document No. 120:83001 Shielded arc **welding**
 electrode for high-chromium ferritic heat-resistant steels. Yamane,
 Kunihide; Sakurai, Hideo; Aoyama, Junichi (Nippon Steel Corp,
 Japan). Jpn. Kokai Tokkyo Koho JP 05261589 A2 19931012 Heisei, 7
 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-60720
 19920317.

AB The electrode comprises a steel core wire contg. (based on the total
 electrode), C 0.01-0.12, Si 0.3-2.4, Mn 0.3-1.9, V 0.03-0.40, Nb
 0.01-0.15, N 0.01-0.08, Cr 5.8-13, Ni 0.05-1.2, Mo 0.3-1.6, W
 0.5-3.5, and Co 1.0-5.0 and/or Cu 0.5-4.0% and coated with a flux
 contg. an arc stabilizer, slug-forming agent, and a binder. In
welding high-chromium ferritic heat-resistant steels, the
 electrode produces **welds** having high toughness and
 cracking resistance, and good creep properties at high temp.

IT 152318-58-6

(shielded arc **welding** electrode, for high-chromium
 ferritic heat-resistant steels)

RN 152318-58-6 HCAPLUS

CN Iron alloy, base, Fe 67-91, Cr 5.8-13, Co 1-5, Cu 0.5-4, W 0.5-3.5, Si
 0.3-2.4, Mn 0.3-1.9, Mo 0.3-1.6, Ni 0-1.2, V 0-0.4, Nb 0-0.2, C 0-0.1, N
 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	67 - 91	7439-89-6
Cr	5.8 - 13	7440-47-3
Co	1 - 5	7440-48-4
Cu	0.5 - 4	7440-50-8
W	0.5 - 3.5	7440-33-7
Si	0.3 - 2.4	7440-21-3
Mn	0.3 - 1.9	7439-96-5
Mo	0.3 - 1.6	7439-98-7
Ni	0 - 1.2	7440-02-0
V	0 - 0.4	7440-62-2
Nb	0 - 0.2	7440-03-1
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

IC ICM B23K035-30

ICS C22C038-00; C22C038-18

CC 55-9 (Ferrous Metals and Alloys)

ST shielded arc **welding** electrode copper; cobalt shielded arc
welding electrode

IT **Welding**

(shielded metal-arc, electrodes, for high-chromium ferritic

heat-resistant steels)
 IT 152318-58-6
 (shielded arc **welding** electrode, for high-chromium
 ferritic heat-resistant steels)
 IT 11100-60-0, miscellaneous
 (**welding** of ferritic, shielded arc electrode for)
 IT 66020-71-1 152653-90-2 152653-91-3
 (**welding** of, shielded arc electrode for)

=> d 185 1-20 cbib abs hitstr hitind

L85 ANSWER 1 OF 20 HCAPLUS COPYRIGHT 2002 ACS
 2002:586757 Document No. 137:235611 T/P92 (9%Cr-2%W steel) an ideal
 candidate for advanced boiler tubes, headers and main steam pipes.
 Arbab, A.; Vaillant, J. C.; Vandenberghe, B. (Vallourec Research
 Center, Aulnoye-Aymeries, F-59620, Fr.). Advances in Materials
 Technology for Fossil Power Plants, Proceedings of the Conference,
 3rd, Swansea, United Kingdom, Apr. 5-6, 2001, 99-112. Editor(s):
 Viswanathan, R.; Bakker, W. T.; Parker, J. D. Institute of
 Materials: London, UK. ISBN: 1-86125-145-9 (English) 2001. CODEN:
 69CXVZ.

AB The use of the W-content 9%Chromium ferritic steel introduced in
 1995 in ASTM A213 and A335 as T92 and P92, is now extending more and
 more for advanced power boilers. A previous published paper has
 presented first V&M TUBES* (*VALLOUREC & MANNESMANN TUBES)
 experiences with the Grade 92. The main aim of this paper is to
 give complementary metallurgical information including aging and
 creep properties and practical tech. advises on the
workability of tubes and pipe, namely cold bending, hot
 bending and different **welding** processes. The main
 advantages of Grade 92 appear to be: - very good creep properties
 competing with austenitic stainless steels and a price which is
 rather lower, - thermal fatigue, heat transfer and thermal expansion
 which are more favorable, allowing frequent start-up and shut-down
 of boilers. - **Workability** and **weldability** which
 are similar to the well-known T91, therefore easier and cheaper than
 those of austenitic stainless steels. Thanks to its experience, V&M
 TUBES has now worldwide T/P92 refs. Besides, in order to answer to
 the new market of power plants with very high thermal efficiency,
 V&M develops other new ferritic material including a 12%Cr steel
 with improved oxidn. and creep behavior.

IT 138410-99-8
 (T/P92 (9%CR-2%W steel) an ideal candidate for advanced boiler
 tubes, headers, and main steam pipes)
 RN 138410-99-8 HCAPLUS
 CN Iron alloy, base, Fe,C,Cr,Mn,Mo,N,Nb,Si,V,W (NF616) (9CI) (CA INDEX
 NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		

Fe	87	-	89	7439-89-6
Cr	8.3	-	9.8	7440-47-3
W	1.5	-	2	7440-33-7
Mo	0.3	-	0.8	7439-98-7
Mn	0.2	-	0.6	7439-96-5
V		0.2		7440-62-2
Si	0	-	0.2	7440-21-3
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0
Nb	0	-	0.1	7440-03-1

CC 55-3 (Ferrous Metals and Alloys)
ST chromium tungsten steel property boiler tube; **metalworking**
chromium tungsten steel; **welding** chromium tungsten steel;
thermal fatigue chromium tungsten steel; creep rupture chromium
tungsten steel
IT Aging, materials
Bending strength
Boiler pipes
Creep
Fatigue, mechanical
Fracture (materials)
Heat transfer
Impact strength
Metalworking
Tensile strength
Thermal expansion
Thermal fatigue
Welding of metals
Welds
Yield strength
(T/P92 (9%CR-2%W steel) an ideal candidate for advanced boiler
tubes, headers, and main steam pipes)
IT 60589-46-0, TP347H **138410-99-8**
(T/P92 (9%CR-2%W steel) an ideal candidate for advanced boiler
tubes, headers, and main steam pipes)

L85 ANSWER 2 OF 20 HCAPLUS COPYRIGHT 2002 ACS

2002:407006 Document No. 136:404919 Manufacture of corrosion-resistant
steel pipes with controlled texture for high **formability**.

Amafuji, Masayuki; Kikuchi, Masao; Fujita, Nobuhiro; Yoshinaga,
Naoki; Ito, Akira (Nippon Steel Corp., Japan). Jpn. Kokai Tokkyo
Koho JP 2002155345 A2 20020531, 12 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 2000-349572 200011/6.

AB The pipes comprise steels contg. C 0.001-0.3, N 0.001-0.2, Si
0.01-2, Mn 0.01-5, and Cr 5-30 wt.%. In the pipes, the av. value of
the x-ray random intensity ratio of the orientation groups
{110}<110>-{111}<110> in the plane at 1/2 steel sheet thickness is
.gtoreq.2.0, and that of the orientation group {110}<110> is
.gtoreq.3.0. Alternatively, in the steel pipes, the n values in the
longitudinal direction and in the circumference direction are both
.gtoreq.0.12. Hot-rolled or cold-rolled steels with the compn. and

a controlled crystal texture (controlled x-ray random intensity ratios) are formed into pipes, heated, and then processed at 600-1000.degree. for diam. redn. for manufg. the title steel pipes.

IT 430467-12-2

(manuf. of corrosion-resistant steel pipe with controlled crystal texture for high **formability**)

RN 430467-12-2 HCAPLUS

CN Iron alloy, base, Fe 62-95, Cr 5-30, Mn 0-5, Si 0-2, C 0-0.3, N 0-0.2
(9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	62 - 95	7439-89-6
Cr	5 - 30	7440-47-3
Mn	0 - 5	7439-96-5
Si	0 - 2	7440-21-3
C	0 - 0.3	7440-44-0
N	0 - 0.2	17778-88-0

IC ICM C22C038-00

ICS C21D008-10; C22C038-18; C22C038-58

CC 55-3 (Ferrous Metals and Alloys)

ST steel pipe corrosion resistance **formability** crystal texture manuf

IT Corrosion-resistant materials

Heat treatment

Pipes and Tubes

(manuf. of corrosion-resistant steel pipe with controlled crystal texture for high **formability**)

IT Rare earth metals, uses

(microalloying element; manuf. of corrosion-resistant steel pipe with controlled crystal texture for high **formability**)

IT **Metalworking**

(piping; manuf. of corrosion-resistant steel pipe with controlled crystal texture for high **formability**)

IT 83479-71-4	169819-58-3	169959-77-7	209400-57-7	430466-86-7
430466-87-8	430466-88-9	430466-89-0	430466-90-3	430466-91-4
430466-93-6	430466-94-7	430466-95-8	430466-96-9	430466-97-0
430466-98-1	430466-99-2	430467-00-8	430467-01-9	430467-02-0
430467-03-1	430467-04-2	430467-05-3	430467-06-4	430467-07-5
430467-08-6	430467-09-7	430467-10-0	430467-11-1	

430467-12-2

(manuf. of corrosion-resistant steel pipe with controlled crystal texture for high **formability**)

IT 7439-95-4, Magnesium, uses 7440-42-8, Boron, uses 7440-70-2,
Calcium, uses 7704-34-9, Sulfur, uses 7723-14-0, Phosphorus,
uses

(microalloying element; manuf. of corrosion-resistant steel pipe with controlled crystal texture for high **formability**)

2002:55111 Document No. 136:88718 Production and examination of hollow structure cooling components of ferritic-martensitic 9 to 12% chromium steels. El-Magd, E.; Kranz, A.; Kopp, R.; Hohmeier, P. (Lehr- und Forschungsgebiet Werkstoffkunde (LFW), RWTH Aachen, Aachen, Germany). VGB PowerTech, 81(11), 76-83 (German) 2001. CODEN: VGPOFN. ISSN: 1435-3199. Publisher: VGB PowerTech e. V..

AB In the present anal., main features of the construction and manufg. of a porous cooling sleeve for the use in power plants were described. For cold-rolled sheets made of NF 616 and X20CrMoV12-1, first investigations were carried out concerning hardness, microstructure and mech. behavior. It has been shown that the sheets show a mid hardness, high tensile strength and very small **ductility**. The "segment-segment"-joining by means of laser **welding** causes a further hardening which must be reduced through a final heat treatment or pre-warming during the **welding**; however, the hardness curve in the **weld** can only be changed in the abs. value but not in the profile form. This is to be considered in particular in case of creep load, since a failure is to be expected here in the intercrit. zone. Furthermore, it could be stated that the orientation of the **weld** to the load direction must also be considered during the constructive design of the cooling sleeve. In particular, the investigation of the hardness differences during the joining of the hollow structure of wire mesh and sheets, as well as the addnl. hardening through the joining of the segments by means of laser **welding** will be the cause of future activities. Thus, the sequence of the forming and joining of the single components is to be defined, in the course of which microstructural aspects will come to the fore in particular. A further emphasis will be the high temp. behavior of the single components and the compd. Through the detn. of the hot strength of all components, parameters are supposed to be provided for the three dimensional FEM-modeling of the cool sleeve with regard to the strength. Component creep tests in the temp. range of 650C are supposed to describe the fundamental creep property of such a hollow structure. Exptl. data taken from literature (e.g. COST 501) are therefore used as comparison. In future project phases, the manufg. and investigation of cooling components made of Ni basis materials is taken into account in order to be able to work in higher temp. ranges and other applications.

IT 138410-99-8, NF 616

(prodn. and examn. of hollow structure cooling components of ferritic-martensitic 9 to 12% chromium steels)

RN 138410-99-8 HCAPLUS

CN Iron alloy, base, Fe,C,Cr,Mn,Mo,N,Nb,Si,V,W (NF616) (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	87 - 89	7439-89-6
Cr	8.3 - 9.8	7440-47-3
W	1.5 - 2	7440-33-7

Mo	0.3	-	0.8	7439-98-7
Mn	0.2	-	0.6	7439-96-5
V		0.2		7440-62-2
Si	0	-	0.2	7440-21-3
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0
Nb	0	-	0.1	7440-03-1

CC 55-3 (Ferrous Metals and Alloys)

ST ferritic martensitic chromium steel hollow cooling structure; laser
welding ferritic martensitic chromium steel; tensile yield
strength ferritic martensitic chromium steel

IT **Welding** of metals
(laser; prodn. and examn. of hollow structure cooling components
of ferritic-martensitic 9 to 12% chromium steels)

IT Cooling apparatus
Creep
Ductility
Hardness (mechanical)
Heat treatment
Microhardness
Microstructure
Tensile strength
Welding of metals
Welds
Yield strength
(prodn. and examn. of hollow structure cooling components of
ferritic-martensitic 9 to 12% chromium steels)

IT 54532-26-2, X20CrMoV12-1 **138410-99-8**, NF 616
(prodn. and examn. of hollow structure cooling components of
ferritic-martensitic 9 to 12% chromium steels)

L85 ANSWER 4 OF 20 HCAPLUS COPYRIGHT 2002 ACS

2001:681513 Document No. 135:229896 **Ferritic**

stainless steel with superior **weldability**

and corrosion resistance. Kimura, Ken; Amafuji, Masayuki;
Shigezato, Genichi; Sugiyama, Masaaki; Inoue, Hiroshige (Nippon
Steel Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2001254153 A2
20010918, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
2000-66705 20000310.

AB The title steel contains C 0.0005-0.08, Si 0.01-1, Mn 0.01-1, P
.ltoreq.0.04, Cr 10-25, S 0.0001-0.01, N 0.0005-0.08, Mg
0.0005-0.01, Ti 0.01-0.8, Al 0.005-0.2, and addnl. .gtoreq.1 metals
of B 0.0005-0.005, Nb 0.05-0.5, Zr 0.05-0.5, Mo 0.1-2, Ni 0.1-2, and
Cu 0.1-2%, and has a 0.05-5 .mu.m-diam. cryst. Mg-Al oxide inclusion
distribution of .gtoreq.3 grains/mm2 in its microstructure. The
steel is superior in **weldability**, corrosion resistance,
tensile strength and useful for household appliances or automotive
mufflers.

IT **358738-45-1 358738-46-2**

(**ferritic stainless steel** with
superior **weldability** and corrosion resistance for

household appliances or automotive mufflers)

RN 358738-45-1 HCAPLUS

CN Iron alloy, base, Fe 72-90,Cr 10-25,Mn 0-1,Si 0-1,Ti 0-0.8,Al
0-0.2,C 0-0.1,N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	72 - 90	7439-89-6
Cr	10 - 25	7440-47-3
Mn	0 - 1	7439-96-5
Si	0 - 1	7440-21-3
Ti	0 - 0.8	7440-32-6
Al	0 - 0.2	7429-90-5
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

RN 358738-46-2 HCAPLUS

CN Iron alloy, base, Fe 65-90,Cr 10-25,Cu 0.1-2,Mo 0.1-2,Ni 0.1-2,Mn
0-1,Si 0-1,Ti 0-0.8,Nb 0-0.5,Zr 0-0.5,Al 0-0.2,C 0-0.1,N 0-0.1 (9CI)
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	65 - 90	7439-89-6
Cr	10 - 25	7440-47-3
Cu	0.1 - 2	7440-50-8
Mo	0.1 - 2	7439-98-7
Ni	0.1 - 2	7440-02-0
Mn	0 - 1	7439-96-5
Si	0 - 1	7440-21-3
Ti	0 - 0.8	7440-32-6
Nb	0 - 0.5	7440-03-1
Zr	0 - 0.5	7440-67-7
Al	0 - 0.2	7429-90-5
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

IC ICM C22C038-00

ICS C22C038-28; C22C038-54

CC 55-3 (Ferrous Metals and Alloys)

ST steel **weldability** corrosion resistance household appliance
muffler

IT Appliances
Mufflers

(**ferritic stainless steel** with
superior **weldability** and corrosion resistance for
household appliances or automotive mufflers)

IT	169819-58-3	180464-22-6	210101-49-8	347359-19-7	358738-34-8
	358738-35-9	358738-36-0	358738-37-1	358738-38-2	358738-39-3
	358738-40-6	358738-41-7	358738-42-8	358738-43-9	358738-44-0

358738-45-1 358738-46-2

(**ferritic stainless steel** with
superior **weldability** and corrosion resistance for
household appliances or automotive mufflers)

IT 12032-52-9, Magnesium titanate (Mg_2TiO_4) 12068-51-8, Magnesium
aluminate (MgAl_2O_4)

(inclusions; **ferritic stainless steel**
with superior **weldability** and corrosion resistance for
household appliances or automotive mufflers)

X L85 ANSWER 5 OF 20 HCAPLUS COPYRIGHT 2002 ACS

2001:600025 Document No. 135:260363 Modeling the development of creep
damage: The LICON experience. Auerkari, Pertti; Holdsworth, Stuart;
Rantala, Juhani Henrik; Hurst, Roger; Coussement, Carinne; Hack, Roy
(VTT Manufacturing Technology, Espoo, Finland). VTT Symposium, 212,
609-620 (English) 2001. CODEN: VTTSE9. ISSN: 0357-9387.
Publisher: Valtion Teknillinen Tutkimuskeskus.

AB Many plant components are designed for long term operation at high
temp., where they are subjected to creep damage. Development of
creep damage in the form of creep cavitation and cracking can be an
important sign of expended life, but was relatively tedious to study
in lab. environment according to LICON [BE95-3019] project.
Consequently, material characteristic signature of creep damage was
mostly obtained from service exposed material from the plant. This
is inconvenient particularly for new materials for which no long
term testing data or service experience is available. The paper
describes the LICON approach to induce service-like creep cavitation
damage through multiaxial loading of feature specimens. Examples
are shown and discussed for parent and **welded** 9% chromium
steels P91, P92 and E911, as well as for dissimilar **welds**
of 21/4Cr-1Mo (P22). The results demonstrate that unlike the
traditional uniaxial testing, the selected approach can produce
appropriate creep cavitation damage in high-**ductility**
steels within a reasonable time to characterize new materials and to
support in-service inspections.

IT 138410-99-8, P92

(modeling of creep damage in **welded** chromium steels for
generating plants)

RN 138410-99-8 HCAPLUS

CN Iron alloy, base, Fe,C,Cr,Mn,Mo,N,Nb,Si,V,W (NF616) (9CI) (CA INDEX
NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	87	-	89	7439-89-6
Cr	8.3	-	9.8	7440-47-3
W	1.5	-	2	7440-33-7
Mo	0.3	-	0.8	7439-98-7
Mn	0.2	-	0.6	7439-96-5
V		0.2		7440-62-2
Si	0	-	0.2	7440-21-3

C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0
Nb	0	-	0.1	7440-03-1

CC 55-12 (Ferrous Metals and Alloys)
 ST modeling creep cavitation chromium steel **ductility weld**
 IT Cavitation
 Crack (fracture)
 Creep
Ductility
 Testing of materials
 (modeling of creep damage in **welded** chromium steels for generating plants)
 IT 39362-68-0, 2.25Cr1Mo 99693-91-1, P91 **138410-99-8**, P92
 171091-27-3, E911
 (modeling of creep damage in **welded** chromium steels for generating plants)

L85 ANSWER 6 OF 20 HCAPLUS COPYRIGHT 2002 ACS
 2001:185103 Document No. 134:225587 **Ferritic stainless steel** alloyed for sheets having high **ductility** and good press **formability** without ridging defects. Ota, Hiroki; Kato, Yasushi; Ujio, Takumi; Satoh, Susumu (Kawasaki Steel Corporation, Japan). Eur. Pat. Appl. EP 1083237 A2 20010314, 39 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-118773 20000830. PRIORITY: JP 1999-255898 19990909; JP 1999-312880 19991102; JP 1999-324635 19991115.

AB The ferritic high-Cr steel for sheets having good press **formability** contains mainly C 0.001-0.12, N 0.001-0.12, and Cr 9-32% (esp. 11-18%), optionally with Al 0.001-0.03, B 0.0002-0.0030, and Mo and/or Cu 0.5-2.5%. The stainless steel ingot is hot rolled, annealed, cold rolled with 2-15% redn., and finish annealed at 700-1000.degree. with recrystn. The resulting sheets have high **ductility** and press **formability** with ridging prevention, for a smooth surface after forming. The typical **stainless steel** for ferritic sheets with elongation .apprx.34% contains C 0.063, N 0.033, Si 0.27, Mn 0.60, Cr 16.3, Ni 0.33, V 0.061, Al 0.001, P 0.030, and S 0.006%, vs. the elongation of .apprx.28% and ridging defects when manufd. outside the process specifications.

IT 329762-69-8 329762-70-1
 (ferritic, alloying of; **stainless steel** for ferritic sheets having **ductility** and **formability** without ridging)

RN 329762-69-8 HCAPLUS

CN Iron alloy, base, Fe 68-91, Cr 9-32, C 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component Component Component

	Percent	Registry Number
Fe	68 - 91	7439-89-6
Cr	9 - 32	7440-47-3
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

RN 329762-70-1 HCAPLUS

CN Iron alloy, base, Fe 82-89,Cr 11-18,C 0-0.1,N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	82 - 89	7439-89-6
Cr	11 - 18	7440-47-3
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

IT 128777-10-6 168835-40-3 168835-43-6
 204570-98-9 239802-87-0 318536-65-1
 329762-71-2 329762-72-3 329762-73-4
 329762-74-5 329762-75-6 329762-76-7
 329762-77-8 329762-78-9 329762-79-0
 329762-80-3 329762-81-4 329762-83-6
 329762-84-7 329762-85-8 329762-86-9
 329762-87-0 329762-88-1 329762-89-2
 329762-90-5 329762-91-6 329762-92-7
 329762-93-8 329762-94-9

(ferritic; stainless steel for
 ferritic sheets having ductility and
 formability without ridging)

RN 128777-10-6 HCAPLUS

CN Iron alloy, base, Fe 83,Cr 16,Mn 0.6,Si 0.3,C 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	83	7439-89-6
Cr	16	7440-47-3
Mn	0.6	7439-96-5
Si	0.3	7440-21-3
C	0.1	7440-44-0

RN 168835-40-3 HCAPLUS

CN Iron alloy, base, Fe 80,Cr 18,Mo 1.2,Ti 0.3,Mn 0.2,Si 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
-----------	-------------------	---------------------------

Fe	80	7439-89-6
Cr	18	7440-47-3
Mo	1.2	7439-98-7
Ti	0.3	7440-32-6
Mn	0.2	7439-96-5
Si	0.1	7440-21-3

RN 168835-43-6 HCAPLUS

CN Iron alloy, base, Fe 88,Cr 11,Si 0.4,Ti 0.3,Mn 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	88	7439-89-6
Cr	11	7440-47-3
Si	0.4	7440-21-3
Ti	0.3	7440-32-6
Mn	0.2	7439-96-5

RN 204570-98-9 HCAPLUS

CN Iron alloy, base, Fe 83,Cr 16,Mn 0.5,Si 0.2,C 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	83	7439-89-6
Cr	16	7440-47-3
Mn	0.5	7439-96-5
Si	0.2	7440-21-3
C	0.1	7440-44-0

RN 239802-87-0 HCAPLUS

CN Iron alloy, base, Fe 88,Cr 11,Mn 0.7,Si 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	88	7439-89-6
Cr	11	7440-47-3
Mn	0.7	7439-96-5
Si	0.2	7440-21-3

RN 318536-65-1 HCAPLUS

CN Iron alloy, base, Fe 82,Cr 16,Mn 0.7,Ni 0.3,Si 0.3,C 0.1,V 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	82	7439-89-6

Cr	16	7440-47-3
Mn	0.7	7439-96-5
Ni	0.3	7440-02-0
Si	0.3	7440-21-3
C	0.1	7440-44-0
V	0.1	7440-62-2

RN 329762-71-2 HCAPLUS

CN Iron alloy, base, Fe 83,Cr 16,Mn 0.6,Ni 0.3,Si 0.3,C 0.1,V 0.1 (9CI)
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====		
Fe	83	7439-89-6
Cr	16	7440-47-3
Mn	0.6	7439-96-5
Ni	0.3	7440-02-0
Si	0.3	7440-21-3
C	0.1	7440-44-0
V	0.1	7440-62-2

RN 329762-72-3 HCAPLUS

CN Iron alloy, base, Fe 83,Cr 16,Mn 0.5,Si 0.3,Ni 0.2,V 0.1 (9CI) (CA
INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====		
Fe	83	7439-89-6
Cr	16	7440-47-3
Mn	0.5	7439-96-5
Si	0.3	7440-21-3
Ni	0.2	7440-02-0
V	0.1	7440-62-2

RN 329762-73-4 HCAPLUS

CN Iron alloy, base, Fe 81,Cr 18,Mn 0.6,Si 0.3,Ni 0.2,C 0.1 (9CI) (CA
INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====		
Fe	81	7439-89-6
Cr	18	7440-47-3
Mn	0.6	7439-96-5
Si	0.3	7440-21-3
Ni	0.2	7440-02-0
C	0.1	7440-44-0

RN 329762-74-5 HCAPLUS

CN Iron alloy, base, Fe 83,Cr 16,Mn 0.6,Ni 0.5,Si 0.3 (9CI) (CA INDEX

NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	83	7439-89-6
Cr	16	7440-47-3
Mn	0.6	7439-96-5
Ni	0.5	7440-02-0
Si	0.3	7440-21-3

RN 329762-75-6 HCAPLUS

CN Iron alloy, base, Fe 82,Cr 17,Mn 0.6,Ni 0.3,Si 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	82	7439-89-6
Cr	17	7440-47-3
Mn	0.6	7439-96-5
Ni	0.3	7440-02-0
Si	0.3	7440-21-3

RN 329762-76-7 HCAPLUS

CN Iron alloy, base, Fe 83,Cr 16,Mn 0.6,Ni 0.4,Si 0.3,C 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	83	7439-89-6
Cr	16	7440-47-3
Mn	0.6	7439-96-5
Ni	0.4	7440-02-0
Si	0.3	7440-21-3
C	0.1	7440-44-0

RN 329762-77-8 HCAPLUS

CN Iron alloy, base, Fe 83,Cr 16,Mn 0.5,Ni 0.4,Si 0.3,C 0.1,V 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	83	7439-89-6
Cr	16	7440-47-3
Mn	0.5	7439-96-5
Ni	0.4	7440-02-0
Si	0.3	7440-21-3
C	0.1	7440-44-0
V	0.1	7440-62-2

RN 329762-78-9 HCAPLUS

CN Iron alloy, base, Fe 80,Cr 18,Ni 0.6,Mn 0.5,Si 0.2,C 0.1,V 0.1 (9CI)
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	80	7439-89-6
Cr	18	7440-47-3
Ni	0.6	7440-02-0
Mn	0.5	7439-96-5
Si	0.2	7440-21-3
C	0.1	7440-44-0
V	0.1	7440-62-2

RN 329762-79-0 HCAPLUS

CN Iron alloy, base, Fe 82,Cr 16,Mn 0.7,Ni 0.6,Si 0.4,N 0.1 (9CI) (CA
INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	82	7439-89-6
Cr	16	7440-47-3
Mn	0.7	7439-96-5
Ni	0.6	7440-02-0
Si	0.4	7440-21-3
N	0.1	17778-88-0

RN 329762-80-3 HCAPLUS

CN Iron alloy, base, Fe 86,Cr 13,Mn 0.4,Si 0.2,Ni 0.1,V 0.1 (9CI) (CA
INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	86	7439-89-6
Cr	13	7440-47-3
Mn	0.4	7439-96-5
Si	0.2	7440-21-3
Ni	0.1	7440-02-0
V	0.1	7440-62-2

RN 329762-81-4 HCAPLUS

CN Iron alloy, base, Fe 81,Cr 18,Mn 0.6,Si 0.3,Ni 0.2 (9CI) (CA INDEX
NAME)

Component	Component Percent	Component Registry Number
Fe	81	7439-89-6

Cr	18	7440-47-3
Mn	0.6	7439-96-5
Si	0.3	7440-21-3
Ni	0.2	7440-02-0

RN 329762-83-6 HCAPLUS

CN Iron alloy, base, Fe 82,Cr 16,Ni 0.7,Mn 0.6,Si 0.2,C 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====
Fe	82	7439-89-6
Cr	16	7440-47-3
Ni	0.7	7440-02-0
Mn	0.6	7439-96-5
Si	0.2	7440-21-3
C	0.1	7440-44-0

RN 329762-84-7 HCAPLUS

CN Iron alloy, base, Fe 88,Cr 11,Mo 0.7,Mn 0.4,Si 0.3,Ni 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====
Fe	88	7439-89-6
Cr	11	7440-47-3
Mo	0.7	7439-98-7
Mn	0.4	7439-96-5
Si	0.3	7440-21-3
Ni	0.1	7440-02-0

RN 329762-85-8 HCAPLUS

CN Iron alloy, base, Fe 86,Cr 13,Cu 0.5,Mn 0.4,Si 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====
Fe	86	7439-89-6
Cr	13	7440-47-3
Cu	0.5	7440-50-8
Mn	0.4	7439-96-5
Si	0.3	7440-21-3

RN 329762-86-9 HCAPLUS

CN Iron alloy, base, Fe 83,Cr 16,Mn 0.2,Si 0.2,N 0.1,Ni 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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=====+=====+=====
Fe      83      7439-89-6
Cr      16      7440-47-3
Mn      0.2     7439-96-5
Si      0.2     7440-21-3
N       0.1     17778-88-0
Ni      0.1     7440-02-0

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RN 329762-87-0 HCAPLUS

CN Iron alloy, base, Fe 83,Cr 16,Mn 0.4,Si 0.3,Ni 0.2,N 0.1,V 0.1 (9CI)
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	83	7439-89-6
Cr	16	7440-47-3
Mn	0.4	7439-96-5
Si	0.3	7440-21-3
Ni	0.2	7440-02-0
N	0.1	17778-88-0
V	0.1	7440-62-2

RN 329762-88-1 HCAPLUS

CN Iron alloy, base, Fe 84,Cr 15,Mn 0.6,Si 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	84	7439-89-6
Cr	15	7440-47-3
Mn	0.6	7439-96-5
Si	0.3	7440-21-3

RN 329762-89-2 HCAPLUS

CN Iron alloy, base, Fe 83,Cr 16,Si 1,Mn 0.3,N 0.1 (9CI) (CA INDEX
NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	83	7439-89-6
Cr	16	7440-47-3
Si	1	7440-21-3
Mn	0.3	7439-96-5
N	0.1	17778-88-0

RN 329762-90-5 HCAPLUS

CN Iron alloy, base, Fe 83,Cr 16,Mn 0.6,Si 0.3,N 0.1 (9CI) (CA INDEX
NAME)

Component	Component	Component
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	Percent	Registry Number
=====+=====+=====		
Fe	83	7439-89-6
Cr	16	7440-47-3
Mn	0.6	7439-96-5
Si	0.3	7440-21-3
N	0.1	17778-88-0

RN 329762-91-6 HCAPLUS

CN Iron alloy, base, Fe 83,Cr 16,Mn 1,Si 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	83	7439-89-6
Cr	16	7440-47-3
Mn	1	7439-96-5
Si	0.2	7440-21-3

RN 329762-92-7 HCAPLUS

CN Iron alloy, base, Fe 82,Cr 17,Mn 0.3,Nb 0.3,Si 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	82	7439-89-6
Cr	17	7440-47-3
Mn	0.3	7439-96-5
Nb	0.3	7440-03-1
Si	0.2	7440-21-3

RN 329762-93-8 HCAPLUS

CN Iron alloy, base, Fe 82,Cr 16,Cu 0.5,Mn 0.5,Nb 0.3,Si 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	82	7439-89-6
Cr	16	7440-47-3
Cu	0.5	7440-50-8
Mn	0.5	7439-96-5
Nb	0.3	7440-03-1
Si	0.3	7440-21-3

RN 329762-94-9 HCAPLUS

CN Iron alloy, base, Fe 79,Cr 18,Mo 1.9,Mn 0.4,Nb 0.3,Si 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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=====+=====+=====

Fe	79	7439-89-6
Cr	18	7440-47-3
Mo	1.9	7439-98-7
Mn	0.4	7439-96-5
Nb	0.3	7440-03-1
Si	0.2	7440-21-3

IC ICM C21D008-02

ICS C22C038-18

CC 55-3 (Ferrous Metals and Alloys)

ST **ferritic stainless steel** sheet press
formability

IT Recrystallization

(**ferritic stainless steel**;
stainless steel for **ferritic** sheets
having **ductility** and **formability** without
ridging)

IT **Metalworking**

(press **formability**; **stainless steel**
for **ferritic** sheets having **ductility** and
formability without ridging)

IT 329762-69-8 329762-70-1

(**ferritic**, alloying of; **stainless**
steel for **ferritic** sheets having
ductility and **formability** without ridging)

IT 12597-68-1, **Stainless steel**, properties

128777-10-6 168835-40-3 168835-43-6

204570-98-9 239802-87-0 318536-65-1

329762-71-2 329762-72-3 329762-73-4

329762-74-5 329762-75-6 329762-76-7

329762-77-8 329762-78-9 329762-79-0

329762-80-3 329762-81-4 329762-83-6

329762-84-7 329762-85-8 329762-86-9

329762-87-0 329762-88-1 329762-89-2

329762-90-5 329762-91-6 329762-92-7

329762-93-8 329762-94-9 329762-95-0

(**ferritic**; **stainless steel** for
ferritic sheets having **ductility** and
formability without ridging)

L85 ANSWER 7 OF 20 HCAPLUS COPYRIGHT 2002 ACS

2000:465203 Document No. 133:92604 **Ferritic****stainless steel** with good ridging characteristicand **weld** processibility. Kimura, Ken; Amato, Masayuki;

Moroboshi, Takashi; Abe, Masayuki; Chijiiwa, Yoshiyuki (Nippon Steel

Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2000192199 A2 20000711; 7

pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-371188

19981225.

AB The steel contains C 0.0005-0.08, Si 0.01-1.0, Mn 0.01-1.0, P <0.04,
S 0.0001-0.01, Cr 10-25, Ti 0.01-0.8, Al 0.005-0.1, N 0.0005-0.08,
Mg 0.0005-0.010%. Mg-inclusions having a max. diam. of 0.05-2.0

.mu.m are distributed with a d. of .gtoreq.20/mm2. These inclusions are covered with TiN.

IT **282087-57-4**
 (ferritic stainless steel with good
 ridging characteristic and weld processibility)
 RN 282087-57-4 HCAPLUS
 CN Iron alloy, base, Fe 72-90,Cr 10-25,Mn 0-1,Si 0-1,Ti 0-0.8,Al
 0-0.1,C 0-0.1,N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	72 - 90	7439-89-6
Cr	10 - 25	7440-47-3
Mn	0 - 1	7439-96-5
Si	0 - 1	7440-21-3
Ti	0 - 0.8	7440-32-6
Al	0 - 0.1	7429-90-5
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

IC ICM C22C038-00
 ICS C22C038-28; C22C038-54
 CC 55-3 (Ferrous Metals and Alloys)
 ST **stainless steel ferritic** ridging
 weld processibility
 IT **Welds**
 (ferritic stainless steel with good
 ridging characteristic and weld processibility)
 IT Nonmetallic inclusions
 (magnesium-contg.; ferritic stainless
 steel with good ridging characteristic and weld
 processibility)
 IT 25583-20-4, Titanium nitride
 (coating on magnesium-contg. nonmetallic inclusions;
 ferritic stainless steel with good
 ridging characteristic and weld processibility)
 IT 185750-12-3 282087-48-3 282087-49-4 282087-50-7 282087-51-8
 282087-52-9 282087-53-0 282087-54-1 282087-55-2 282087-56-3
282087-57-4
 (ferritic stainless steel with good
 ridging characteristic and weld processibility)
 IT 7439-95-4, Magnesium, uses
 (inclusions contg.; ferritic stainless
 steel with good ridging characteristic and weld
 processibility)

L85 ANSWER 8 OF 20 HCAPLUS COPYRIGHT 2002 ACS
 2000:249999 Document No. 132:268152 Stainless steel for engine gaskets
 and its manufacture. Adachi, Kazuhiko; Fujisawa, Kazuyoshi;
 Goshokubo, Kenichi; Yamada, Yoshio; Kinoshita, Hiroichi (Sumitomo
 Metal Industries, Ltd., Japan; Ishikawa Gasket K. K.). Jpn. Kokai

Tokkyo Koho JP 2000109957 A2 20000418, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-282758 19981005.

AB The stainless steel contains C + N 0.1-0.3, Si .ltoreq.0.5, Mn .ltoreq.0.7, Cr 10-17, and Ni 0-0.6 wt.% and has 40-80% martensite phase and balance ferrite phase and Vickers hardness 300-500. Claimed process comprises working steel compns. to give predetd. thickness and then quenching at 850-1000.degree.. Engine gaskets using the stainless steel are also claimed. The stainless steel has high strength, **workability**, and corrosion resistance.

IT 263397-28-0
(**stainless steel** contg. martensite and
ferrite manufd. by quenching for engine gaskets)

RN 263397-28-0 HCAPLUS

CN Iron alloy, base, Fe 81-90, Cr 10-17, Mn 0-0.7, Ni 0-0.6, Si 0-0.5, C 0-0.3, N 0-0.3 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	81	-	90	7439-89-6
Cr	10	-	17	7440-47-3
Mn	0	-	0.7	7439-96-5
Ni	0	-	0.6	7440-02-0
Si	0	-	0.5	7440-21-3
C	0	-	0.3	7440-44-0
N	0	-	0.3	17778-88-0

IC ICM C22C038-00

ICS C21D006-00; C22C038-38

CC 55-5 (Ferrous Metals and Alloys)

ST quenching **stainless steel** martensite
ferrite engine gasket

IT Hardness (mechanical)
(Vickers; **stainless steel** contg. martensite
and **ferrite** manufd. by quenching for engine gaskets)

IT Gaskets
Quenching (cooling)
(**stainless steel** contg. martensite and
ferrite manufd. by quenching for engine gaskets)

IT 12173-93-2, Martensite, occurrence 12427-24-6, **Ferrite**
(ferrous metal component)
(**stainless steel** contg. martensite and
ferrite manufd. by quenching for engine gaskets)

IT 263397-25-7 263397-27-9 263397-28-0
(**stainless steel** contg. martensite and
ferrite manufd. by quenching for engine gaskets)

L85 ANSWER 9 OF 20 HCAPLUS COPYRIGHT 2002 ACS

1999:114360 Document No. 130:185383 Stainless steel mirror.

Nagayoshi, Morio (Japan). Jpn. Kokai Tokkyo Koho JP 11044807 A2

19990216 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
1997-215552 19970725.

AB The stainless steel, whose surface is polished, contains C .ltoreq.0.10, Cr 10.0-20.0, Ni .ltoreq.4, and N .ltoreq.0.15 wt.% and has a structure composed of 20-95 vol.% martensite phase and the rest ferrite phase. Preferably, the surface layer of the mirror comprises a martensite single phase. The mirror has high scratch resistance and **formability**.

IT 220676-94-8

(martensite-ferrite stainless steel
mirror for scratch resistance and **formability**)

RN 220676-94-8 HCAPLUS

CN Iron alloy, base, Fe 76-90, Cr 10-20, Ni 0-4, N 0-0.2, C 0-0.1 (9CI)
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	76 - 90	7439-89-6
Cr	10 - 20	7440-47-3
Ni	0 - 4	7440-02-0
N	0 - 0.2	17778-88-0
C	0 - 0.1	7440-44-0

IC ICM G02B005-08

ICS C22C038-00; C22C038-40

CC 55-3 (Ferrous Metals and Alloys)

ST martensite **ferrite stainless steel**

mirror; scratch resistance **formability** stainless steel
mirror

IT Mirrors

(martensite-ferrite stainless steel
mirror for scratch resistance and **formability**)

IT 150899-38-0 220676-94-8

(martensite-ferrite stainless steel
mirror for scratch resistance and **formability**)

L85 ANSWER 10 OF 20 HCAPLUS COPYRIGHT 2002 ACS

1999:97715 Document No. 130:113422 Non-brittle Fe-Cr-Al-rare earth alloy. Li, Bei; Meng, Guang'en; Wu, Shuangxia (Baotou Rare-Earth Research Inst., Ministry of Metallurgical Industry, Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu CN 1122841 A 19960522, 14 pp. (Chinese). CODEN: CNXXEV. APPLICATION: CN 1994-117857 19941111.

AB The title alloy contains Cr 5-50, Al 0-10, RE 0.01-3.0, C <0.2, N <0.2, Ni .ltoreq.30, W, Mo, Nb, Ta, and Co .ltoreq.8, Ti, Zr, and Hf .ltoreq.5, Si .ltoreq.3, Ca .ltoreq.0.2%, and iron balance. The Fe alloy has high heat-resisting property, low high-temp. embrittlement, good cold **workability**, and good **weldability**, and is suitable for manuf. of elec. heating element, resistance element, heat-resisting structure, and heat-resisting coating.

IT 219662-19-8

(Fe-Cr-Al-rare earth alloy with high heat resistance and low

high-temp. embrittlement)

RN 219662-19-8 HCAPLUS

CN Iron alloy, base, Fe 0-95, Cr 5-50, Ni 0-30, Al 0-10, Co 0-8, Mo 0-8, Nb 0-8, Ta 0-8, W 0-8, Hf 0-5, Ti 0-5, Zr 0-5, misch metal 0-3, Si 0-3, C 0-0.2, Ca 0-0.2, N 0-0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	0 - 95	7439-89-6
Cr	5 - 50	7440-47-3
Ni	0 - 30	7440-02-0
Al	0 - 10	7429-90-5
Co	0 - 8	7440-48-4
Mo	0 - 8	7439-98-7
Nb	0 - 8	7440-03-1
Ta	0 - 8	7440-25-7
W	0 - 8	7440-33-7
Hf	0 - 5	7440-58-6
Ti	0 - 5	7440-32-6
Zr	0 - 5	7440-67-7
Misch metal	0 - 3	8049-20-5
Si	0 - 3	7440-21-3
C	0 - 0.2	7440-44-0
Ca	0 - 0.2	7440-70-2
N	0 - 0.2	17778-88-0

IC ICM C22C038-18

CC 55-3 (Ferrous Metals and Alloys)

IT Mechanical properties

Welding

(Fe-Cr-Al-rare earth alloy with high heat resistance and low high-temp. embrittlement)

IT 219662-19-8

(Fe-Cr-Al-rare earth alloy with high heat resistance and low high-temp. embrittlement)

L85 ANSWER 11 OF 20 HCAPLUS COPYRIGHT 2002 ACS

1998:586548 Document No. 129:233874 multiple-phase stainless steels having high strength and **ductility** and excellent antibacterial effects and their preparation. Hasegawa, Morihiro; Miyakusu, Katsuji; Okubo, Naoto; Nakamura, Sadayuki (Nisshin Steel Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10237597 A2 19980908 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-39026 19970224.

AB The title stainless steels contain C[✓] .ltoreq.0.1, Si[✓] .ltoreq.2.0, Mn[✓] .ltoreq.2.0, Cr[✓] 10-20, Ni[✓] .ltoreq.4.0, N .ltoreq.0.1, and Cu 0.4-5 wt.% and have a martensite/ferrite dual phase in which 0.2 vol. % of the phase is dispersed with a Cu-based second phase. The stainless steels may further contain .gtoreq.1 selected from Mo .ltoreq.3, Al .ltoreq.0.20, REM (rare earth metal) .ltoreq.0.20, Y^X .ltoreq.0.20, Ca .ltoreq.0.10, Mg^X .ltoreq.0.10, and B .ltoreq.0.01 wt.%. Hot

rolled stainless steel sheets having the compns. and the multi phases are batch annealed at .gtoreq.500.degree. and .ltoreq.(Ac1 + 100).degree. by soaking for .gtoreq.1 h to accelerate pptn. of the Cu-based second phase, cold rolled, heated at .gtoreq.(Ac1 + 100).degree. and .ltoreq.1100.degree., and cooled to give the title sheets. Due to dispersion of the Cu-based phase, the stainless steels show high and durable antibacterial effects.

IT 212848-29-8

(prepn. of martensite/**ferrite stainless steels** dispersed with Cu-based phase having antibacterial effects)

RN 212848-29-8 HCAPLUS

CN Iron alloy, base, Fe 67-90,Cr 10-20,Cu 0.4-5,Ni 0-4,Mn 0-2,Si 0-2,C 0-0.1,N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	67	-	90	7439-89-6
Cr	10	-	20	7440-47-3
Cu	0.4	-	5	7440-50-8
Ni	0	-	4	7440-02-0
Mn	0	-	2	7439-96-5
Si	0	-	2	7440-21-3
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0

IC ICM C22C038-00

ICS C21D006-00; C22C038-42

CC 55-11 (Ferrous Metals and Alloys)

ST antibacterial stainless steel copper dispersion; martensite **ferrite stainless steel** antibacterial

IT Annealing

(batch; prepn. of martensite/**ferrite stainless steels** dispersed with Cu-based phase having antibacterial effects)

IT Antibacterial agents

(prepn. of martensite/**ferrite stainless steels** dispersed with Cu-based phase having antibacterial effects)

IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses 7440-42-8, Boron, uses 7440-65-5, Yttrium, uses 7440-70-2, Calcium, uses 8049-20-5, Misch metal

(microalloy element; prepn. of martensite/**ferrite stainless steels** dispersed with Cu-based phase having antibacterial effects)

IT 212848-20-9 212848-21-0 212848-22-1 212848-23-2 212848-25-4
212848-26-5 212848-27-6 212848-28-7

(prepn. of martensite/**ferrite stainless steels** dispersed with Cu-based phase having antibacterial effects)

IT 212848-29-8

(prepn. of martensite/**ferrite stainless steels** dispersed with Cu-based phase having antibacterial effects)

L85 ANSWER 12 OF 20 HCAPLUS COPYRIGHT 2002 ACS

1998:239425 Document No. 128:324686 Manufacture of **ferritic stainless steel** sheets having good

ductility and ridging resistance by alloying. Maeda, Shigeru; Yamamoto, Akio (Nippon Steel Corp., Japan). Jpn. Kokai Tokkyo Koho JP 10099951 A2 19980421 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-260522 19961001.

AB The title sheets are manufd. from steel contg. 10-23 wt.% Cr and having .gamma. potential (.gamma.p) .ltoreq.23%, where .gamma.p = $189 + 470[N] + 420[C] + 23[Ni] + 7[Mn] + 9[Cu] - 11.5[Cr] - 11.5[Si] - 52[sol.Al] - 12[Mo]$ (the element symbols represent wt.%), by alloying molten steel (M) in continuous-casting molds with wires (contg. elements to increase .gamma.p) to give .gtoreq.5% higher .gamma.p (vs. M) at inner areas of slabs.

IT 207273-06-1

(alloying with wire in continuous casting of **ferritic stainless steel** for **ductility** and ridging resistance)

RN 207273-06-1 HCAPLUS

CN Iron alloy, base, Fe 75-90, Cr 10-23, Mn 0-1, Si 0-1, Al 0-0.2, C 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
=====+=====+=====				
Fe	75	-	90	7439-89-6
Cr	10	-	23	7440-47-3
Mn	0	-	1	7439-96-5
Si	0	-	1	7440-21-3
Al	0	-	0.2	7429-90-5
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0

IC ICM B22D011-10

ICS B22D011-00; C22C038-00; C22C038-44

CC 55-2 (Ferrous Metals and Alloys)

ST **ferritic stainless steel**

ductility ridging free; continuous casting stainless steel alloying wire

IT Alloying

Wires

(alloying with wire in continuous casting of **ferritic stainless steel** for **ductility** and ridging resistance)

IT Casting of metals

(continuous; alloying with wire in continuous casting of **ferritic stainless steel** for **ductility** and ridging resistance)

IT 120172-37-4 207273-03-8 **207273-06-1** 207273-07-2
207273-08-3 207273-09-4

(alloying with wire in continuous casting of **ferritic stainless steel** for **ductility** and ridging resistance)

IT 7440-50-8, Copper, uses 12725-30-3, SUS440C 36678-21-4, Manganese nitride (MnN)

(wire contg., alloying by; in continuous casting of **ferritic stainless steel** for **ductility** and ridging resistance)

L85 ANSWER 13 OF 20 HCAPLUS COPYRIGHT 2002 ACS

1998:236641 Document No. 128:324685 Manufacture of **ferritic stainless steel** sheets having good

ductility and ridging resistance by alloying. Yamamoto, Akio; Maeda, Shigeru (Nippon Steel Corp., Japan). Jpn. Kokai Tokkyo Koho JP 10099952 A2 19980421 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-260523 19961001.

AB The title sheets are manufd. from steel contg. 10-23 wt.% Cr and having .gamma.potential (.gamma.p) .ltoreq.23%, where .gamma.p = $189 + 470[N] + 420[C] + 23[Ni] + 7[Mn] + 9[Cu] - 11.5[Cr] - 11.5[Si] - 52[sol.Al] - 12[Mo]$ (the element symbols represent wt.%), by alloying molten steel (M) in continuous-casting molds with particles (contg. elements to increase .gamma.p) to give .gtoreq.5% higher .gamma.p (vs. M) at inner areas of slabs.

IT **207273-06-1**

(alloying with particles in continuous casting of **ferritic stainless steel** for **ductility** and ridging resistance)

RN 207273-06-1 HCAPLUS

CN Iron alloy, base, Fe 75-90,Cr 10-23,Mn 0-1,Si 0-1,Al 0-0.2,C 0-0.1,N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	75 - 90	7439-89-6
Cr	10 - 23	7440-47-3
Mn	0 - 1	7439-96-5
Si	0 - 1	7440-21-3
Al	0 - 0.2	7429-90-5
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0

IC ICM B22D011-10

ICS B22D011-00; C22C038-00; C22C038-44

CC 55-2 (Ferrous Metals and Alloys)

ST **ferritic stainless steel**

ductility ridging free; continuous casting stainless steel alloying particle

IT Alloying
Particles

(alloying with particles in continuous casting of
ferritic stainless steel for
ductility and ridging resistance)

IT Casting of metals

(continuous; alloying with particles in continuous casting of
ferritic stainless steel for
ductility and ridging resistance)

IT 110898-48-1 207273-02-7 207273-03-8 207273-04-9 207273-05-0
207273-06-1

(alloying with particles in continuous casting of
ferritic stainless steel for
ductility and ridging resistance)

IT 7440-50-8, Copper, uses 12725-30-3, SUS440C 36678-21-4,
Manganese nitride (MnN)

(particles contg., alloying by; in continuous casting of
ferritic stainless steel for
ductility and ridging resistance)

X L85 ANSWER 14 OF 20 HCAPLUS COPYRIGHT 2002 ACS

1997:71760 Document No. 126:93146 **Welding** materials with
good **welding workability** for high-strength and
high-corrosion resistant ferritic steels. Hirata, Hiromasa;
Igarashi, Masaaki; Ogawa, Kazuhiro (Sumitomo Metal Ind, Japan).
Jpn. Kokai Tokkyo Koho JP 08294793 A2 19961112 Heisei, 9 pp.
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-277611 19951025.
PRIORITY: JP 1995-41757 19950301.

AB The **welding** materials are Fe alloys contg. C 0.03-0.13; Si
0.10-0.80; Cr 8-13; Ni 0.01-1.30; Mo 0.005-0.30; Nb 0.01-0.20; V
0.1-0.5; W 1.5-4.0; Co 0.5-6.0; Cu 0.005-3.0; N 0.003-0.080; Al
.ltoreq.0.01; S 0.001-0.005; B 0-0.020; La, Ce, and/or Y 0-0.002;
and Ca and/or Mg 0-0.002; and impurity P .ltoreq.0.025 wt.%; and
satisfy [0.0925 - 12.5S% .ltoreq. Mn% .ltoreq. 2.0, (Al% + O%)
.ltoreq.0.02]. The obtained **welded** joints show high
strength and corrosion resistance.

IT 185537-07-9

(**welding** material; iron alloy **welding**
materials for **welding** of ferritic steels)

RN 185537-07-9 HCAPLUS

CN Iron alloy, base, Fe 71-90, Cr 8-13, Co 0.5-6, W 1.5-4, Cu 0-3, Ni
0-1.3, Si 0.1-0.8, V 0.1-0.5, Mo 0-0.3, Nb 0-0.2, C 0-0.1, N 0-0.1 (9CI)
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	71 - 90	7439-89-6
Cr	8 - 13	7440-47-3
Co	0.5 - 6	7440-48-4
W	1.5 - 4	7440-33-7
Cu	0 - 3	7440-50-8
Ni	0 - 1.3	7440-02-0
Si	0.1 - 0.8	7440-21-3

V	0.1	-	0.5	7440-62-2
Mo	0	-	0.3	7439-98-7
Nb	0	-	0.2	7440-03-1
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0

IC ICM B23K035-30
ICS C22C038-00; C22C038-54
CC 56-3 (Nonferrous Metals and Alloys)
ST ferritic steel **welding** iron alloy; iron alloy material
welding ferritic steel
IT **Welding**
(materials; iron alloy **welding** materials for
welding of ferritic steels)
IT 12597-69-2, Steel, processes 185537-08-0
(ferritic; iron alloy **welding** materials for
welding of ferritic steels)
IT 185536-88-3 185536-89-4 185536-90-7 185536-91-8 185536-92-9
185536-93-0 185536-95-2 185536-96-3 185536-97-4 185536-98-5
185536-99-6 185537-00-2 185537-01-3 185537-02-4 185537-03-5
185537-04-6 185537-05-7 185537-06-8 **185537-07-9**
(**welding** material; iron alloy **welding**
materials for **welding** of ferritic steels)

L85 ANSWER 15 OF 20 HCAPLUS COPYRIGHT 2002 ACS
1996:538524 Document No. 125:201678 A study of the basic constitution
of 9-11% Cr steels for elevated temperature service. Orr, J.;
Burton, D. (Swinden Technol. Cent., British Steel, Rotherham, S60
3AR, UK). Commission of the European Communities, [Report] EUR, EUR
15843, 81 pp. (English) 1996. CODEN: CECED9. ISSN: 1018-5593.
AB The 9% Cr 1% Mo NbVN steel type known colloquially as 'Steel 91' has
become established as a candidate material for many high temp.
applications. Following a brief review of the history of the
development of high strength 9 CrMo type steels, this project
describes the metallurgical stability, tempering characteristics and
elevated temp. strength of compns. related to Steel 91. Seventeen
compns. were studied. The metallurgical stability of this steel
type is high in terms of prior austenite grain sizes with the grain
coarsening temp. at .apprx.1125.degree.C and little risk of forming
delta ferrite .ltoreq.1150.degree.C. The presence of fine Nb(CN)
particles is considered to be mainly responsible for the control of
austenite grain size at normalizing temps. in the range
1000-1200.degree.C. The tempering resistance is significantly
higher than that of 9%Cr 1% Mo steel due to the pptn. of vanadium
and niobium rich carbides and nitrides. There is a secondary
hardening peak in the tempering curve after .apprx.1 h at
700.degree.C. Tempering has to be carried out at
.ltoreq.800.degree.C due to the risk of reforming martensite at
810.degree.C and higher. The useful tempering range is therefore
730-800.degree.C with optimum performance over the range
750-800.degree.C. The as-tempered hardness is increased by
increasing the normalizing temp. over the range 1050-1200.degree.C

and/or adding addnl. solid soln. strengthening by chromium or tungsten. Furthermore, the adoption of a V:N ratio of .apprx.3.5 i.e. stoichiometric, maximizes the pptn. hardening contribution. The strength at ambient and elevated temps. namely tensile and stress rupture resp., are direct reflections of the tempering characteristics. The test data include results from stress rupture tests completed to durations of 27 165 h at 600 and 650.degree.C. Anal. of the data collected in this project has identified routes for increasing the strength of Steel 91 type material through heat treatment and compn. control. It is recommended that the optimum normalizing temp. is 1100.degree.C which gives high strength with a fine prior austenite grain size, without the risk of intergranular cracking and therefore reduced rupture **ductility** values as found for material normalized from 1200.degree.C. The recommended tempering temp. is considered to be 750.degree.C. By normalizing from 1100.degree.C rather than the 'std.' 1050.degree.C, the material has a sensitivity to tempering temp. This may be a useful control parameter in relation to the need for subsequent heat treatments of **welded** components. Three compn. factors relate to the strength of Steel 91 type material. The base strength arises from the 9% Cr 1% Mo basic alloy content and the pptn. of VN and Nb(CN). By careful control of the vanadium and nitrogen contents within typical ranges of 0.15-0.2% and 0.050-0.065% resp., pptn. strengthening by VN can be maximized. Further solid soln. strengthening can be achieved either by increasing the chromium content or adding 1.5% W. These two solid soln. factors were found not to be additive. Pptn. of Laves phase occurring in these types of steel appears to reduce the solid soln. strength component which may become an important consideration in long service durations. Thus from this work the optimized conditions for Steel 91 are considered to be; normalize from 1100.degree.C and temper at 750.degree.C, with compn. similar to those in ASTM/ASME specifications except for 10.5% Cr or 1.5% W + 0.15/0.20% V + 0.050/0.065% N to maximize the pptn. strength and solid soln. strength parameters. In view of the Laves phase pptn. it may be possible to reduce the tungsten content to below the 1.5% used in this project and still retain a significant solid soln. strength contribution. This could be adopted in further projects in this area as required. The optimized conditions indicated above will probably give a long term strength increase of .apprx.20% over that of the material as specified and used currently.

IT 181231-69-6

(optimization of compn. and heat treatment of 9-11% Cr steels for elevated temp. service)

RN 181231-69-6 HCAPLUS

CN Iron alloy, base, Fe 87-89, Cr 8.7-11, Mo 0.9-1, Mn 0.4-0.5, V 0.1-0.5, Si 0.2-0.3, Ni 0.1-0.3, Nb 0.1-0.2, C 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		

Fe	87	-	89	7439-89-6
Cr	8.7	-	11	7440-47-3
Mo	0.9	-	1	7439-98-7
Mn	0.4	-	0.5	7439-96-5
V	0.1	-	0.5	7440-62-2
Si	0.2	-	0.3	7440-21-3
Ni	0.1	-	0.3	7440-02-0
Nb	0.1	-	0.2	7440-03-1
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0

CC 55-12 (Ferrous Metals and Alloys)

IT 181231-69-6

(optimization of compn. and heat treatment of 9-11% Cr steels for elevated temp. service)

L85 ANSWER 16 OF 20 HCAPLUS COPYRIGHT 2002 ACS

1996:31694 Document No. 124:151828 Investigation on the **weldability** of high temperature alloy tubing materials. Lundin, C. D.; Qiao, C. Y. P. (Mater. Joining Res. Mater. Sci. Eng., Univ. Tennessee, Knoxville, TX, USA). Oak Ridge National Laboratory, [Report] ORNL/FMP (United States), ORNL/FMP--94/1, Proceedings of the Eighth Annual Conference on Fossil Energy Materials, 1994, 365-76 (English) 1994. CODEN: ORFMEY.

AB Gleeble hot **ductility**. Vareststraint hot cracking and Finger hot cracking evaluations on thick wall com. 310HCbN tubing material agree with an verify the **weldability** predictions based on the Vareststraint testing results from thin wall 310HCbN materials. A good correlation was found between hot cracking and hot **ductility** testing results. Short term stress rupture testing of modified 800H, NF709, NF616 and transition joints between modified 800H and T91 was conducted. For **welded** modified 800H (with HD556 and inconel 117 filler), the HAZ exhibits a lower rupture strength as compared to the base metal or filler metal. For **welded** NF709 (with 709 filler), the **weld** metal shows a slightly lower rupture strength compared to the HAZ and base metal in general, the NF709 **weldment** (with NF709 filler) showed in equiv. or slightly lower rupture strength compared to the modified 800H **weldments** (with ether HD556 or inconel 117 filler). A preliminary evaluation on iron aluminide clad stainless steel tubing was carried out. Are spray, GTAW and GMAW techniques were utilized for prepg. the clad coupons. Comparison of the characteristics of the interface in terms of the different fabrication techniques was addressed. Iron aluminide **weld** deposited clad on stainless steel, by fusion **welding**, provides for an excellent bond between the iron aluminide and stainless steel and shows relatively good operational ease.

IT 138410-99-8, NF616

(**weldability** of high-temp. alloy tubing materials)

RN 138410-99-8 HCAPLUS

CN Iron alloy, base, Fe,C,Cr,Mn,Mo,N,Nb,Si,V,W (NF616) (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	87 - 89	7439-89-6
Cr	8.3 - 9.8	7440-47-3
W	1.5 - 2	7440-33-7
Mo	0.3 - 0.8	7439-98-7
Mn	0.2 - 0.6	7439-96-5
V	0.2	7440-62-2
Si	0 - 0.2	7440-21-3
C	0 - 0.1	7440-44-0
N	0 - 0.1	17778-88-0
Nb	0 - 0.1	7440-03-1

CC 55-9 (Ferrous Metals and Alloys)

ST steel tube **weldability**

IT Pipes and Tubes

Weldability

(**weldability** of high-temp. alloy tubing materials)

IT 11109-50-5, AISI 304 97668-31-0, HR3C 99693-91-1, T91
136359-40-5, NF709 **138410-99-8**, NF616

(**weldability** of high-temp. alloy tubing materials)

✓ L85 ANSWER 17 OF 20 HCAPLUS COPYRIGHT 2002 ACS
1995:913538 Document No. 123:319442 Manufacture of stainless steel strips having high strength, **ductility**, and **welding** softening resistance. Igawa, Takashi; Fujimoto, Hiroshi (Nisshin Steel Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 07216451 A2 19950815 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-25865 19940131.

AB Stainless steel strips contg. C ≤ 0.10 , Si ≤ 4.5 , Mn ≤ 5.0 , Cr 10.0-17.0, Ni 3.0-10.0, N ≤ 0.10 , and optionally Cu, Mo, and/or Co $\leq 4.0\%$ with γ . [γ = -210 + 650C + 10Si + 12(Ni + Mn) + 7Cr + 150N] 3-35 and having dual phase structure of martensite phase and austenite phase are heated at 400-600.degree. for ≤ 30 min under application of $\leq 3\%$ strain. The stainless steel strips have high resistance to **welding** softening and 0.2% yield strength ≥ 900 N/mm² and are used for structural materials.

IT **170212-74-5**

(manuf. of stainless steel strips having high strength and **ductility** and **welding** softening resistance by heating under applied strain)

RN 170212-74-5 HCAPLUS

CN Iron alloy, base, Fe 63-87, Cr 10-17, Ni 3-10, Mn 0-5, Si 0-4.5, C 0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	63 - 87	7439-89-6

Cr	10	-	17	7440-47-3
Ni	3	-	10	7440-02-0
Mn	0	-	5	7439-96-5
Si	0	-	4.5	7440-21-3
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0

IC ICM C21D008-02
ICS C21D006-00; C22C038-00; C22C038-40; C22C038-58
CC 55-3 (Ferrous Metals and Alloys)
IT 170154-23-1 170154-24-2 170154-25-3 170154-26-4 170154-27-5
170154-28-6 170154-29-7 170154-30-0 **170212-74-5**
(manuf. of stainless steel strips having high strength and
ductility and **welding** softening resistance by
heating under applied strain)

L85 ANSWER 18 OF 20 HCAPLUS COPYRIGHT 2002 ACS
1995:763796 Document No. 123:149849 High-strength, high-
ductility two-phase stainless steel strips and process for
producing the same. Miyakusu, Katsuhisa; Oda, Yukio; Igawa, Takashi
(Nisshin Steel Co., Ltd., Japan). PCT Int. Appl. WO 9513405 A1
19950518, 36 pp. DESIGNATED STATES: W: KR, US; RW: AT, BE, CH, DE,
DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (Japanese). CODEN:
PIXXD2. APPLICATION: WO 1994-JP1894 19941110. PRIORITY: JP
1993-306105 19931112.

AB The two-phase stainless steel strips contain C ≤ 0.10 , Si
 ≤ 2.0 , Mn ≤ 4.0 , P ≤ 0.04 , S ≤ 0.010 , Ni
 ≤ 4.0 , Cr 10.0-20.0, N ≤ 0.12 , B > 0.005 but
 ≤ 0.03 , O ≤ 0.02 , Cu ≤ 4.0 , optionally Al
 ≤ 0.20 , Mo ≤ 3.0 , rare earth metal ≤ 0.20 , Y
 ≤ 0.20 , Ca ≤ 0.10 , and Mg $\leq 0.10\%$. The stainless
steel strips have a Vickers hardness of at least 200 and a two-phase
structure of 20-95 vol.% of a martensitic phase having a mean
particle diam. of at most 10 μm and 80-5 vol.% of a ferric phase
in strip form. The stainless steel strips are manufd. by hot
rolling slab, cold rolling, keeping at a 2-phase region temp.
between A_{c1} point+100.degree. and 1100.degree. for <10 min, and
cooling to normal temp. at 1-1000.degree./s.

IT **167138-66-1**
(manuf. of high-strength and high-**ductility** two-phase
stainless steel strips by rolling and heating)

RN 167138-66-1 HCAPLUS

CN Iron alloy, base, Fe 66-90, Cr 10-20, Cu 0-4, Mn 0-4, Ni 0-4, Si 0-2, C
0-0.1, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	66 - 90	7439-89-6
Cr	10 - 20	7440-47-3
Cu	0 - 4	7440-50-8
Mn	0 - 4	7439-96-5

Ni	0	-	4	7440-02-0
Si	0	-	2	7440-21-3
C	0	-	0.1	7440-44-0
N	0	-	0.1	17778-88-0

IC ICM C22C038-40

CC 55-3 (Ferrous Metals and Alloys)

IT **Metalworking**

(rolling, manuf. of high-strength and high-**ductility**
two-phase stainless steel strips by rolling and heating)

IT 150899-38-0 167098-10-4 167098-11-5 167098-12-6 167098-13-7
167098-14-8 167098-15-9 **167138-66-1**
(manuf. of high-strength and high-**ductility** two-phase
stainless steel strips by rolling and heating)

L85 ANSWER 19 OF 20 HCAPLUS COPYRIGHT 2002 ACS

1988:98991 Document No. 108:98991 Martensitic stainless steel sheets
of good **formability** and high oxidation resistance. Miura,
Kazuya; Yoshioka, Keiichi (Kawasaki Steel Corp., Japan). Jpn. Kokai
Tokkyo Koho JP 62214132 A2 19870919 Showa, 4 pp. (Japanese).
CODEN: JKXXAF. APPLICATION: JP 1986-56067 19860315.

AB Hot-rolled plates of martensitic stainless steel contg. C <0.4, Si
<1, Mn <1, Ni <0.6, Cr 10-15, Al 0.025-0.3, and N 0.025-0.06% are
annealed at 650-800.degree. for <300 s, descaled, cold-rolled, and
then finish-annealed to manuf. sheets of good **formability**
and ridging resistance as well as high oxidn. resistance for use in
manuf. of western dishes. Thus, a slab of steel contg. C 0.03, Si
0.39, Mn 0.39 P 0.03, S 0.005, Al 0.08, Cr 13.3, Ni 0.08, and N
0.029% was hot-rolled, annealed at 680.degree. for 100 s, pickled,
cold-rolled to 1 mm thick, and finish-annealed in a N atm. contg.
CO2 12, O 3, and H2O 15%. The manufd. steel sheets showed yield
point 25.6, tensile strength 50 kg/mm2, elongation 33.2%, Lankford
value 1.28, max. surface roughness 6 .mu., and oxidn. wt. gain (in
finish annealing) <0.005 mg/cm2, vs. 28.3, 45.8, 34, 1.13, 15, and
0.20, resp., for sheets manufd. by annealing 8 h at 800.degree. for
hot-rolled plates of a similar steel but contg. 0.008% Al and 0.017%
N.

IT **113097-50-0**

(heat treatment of hot-rolled, for good **formability** and
high oxidn. resistance)

RN 113097-50-0 HCAPLUS

CN Iron alloy, base, Fe 82-90, Cr 10-15, Mn 0-1, Si 0-1, Ni 0-0.6, C
0-0.4, Al 0-0.3, N 0-0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Fe	82 - 90	7439-89-6
Cr	10 - 15	7440-47-3
Mn	0 - 1	7439-96-5
Si	0 - 1	7440-21-3
Ni	0 - 0.6	7440-02-0

C	0	-	0.4	7440-44-0
Al	0	-	0.3	7429-90-5
N	0	-	0.1	17778-88-0

IC ICM C21D009-46

ICS C21D008-02

ICA C22C038-00; C22C038-40

CC 55-5 (Ferrous Metals and Alloys)

ST carbon steel rolling annealing; **workability** heat treatment

carbon steel; oxidn resistance carbon steel sheet; smoothness carbon steel sheet

IT 111376-92-2

(formability and oxidn. resistance of hot-rolled sheets of)

IT 113097-50-0

(heat treatment of hot-rolled, for good **formability** and high oxidn. resistance)

L85 ANSWER 20 OF 20 HCAPLUS COPYRIGHT 2002 ACS

1974:481210 Document No. 81:81210 Low-temperature, high-toughness steel having little thermal expansion coefficient. Yoshimura, Hirofumi; Honma, Hiroyuki; Ito, Teiji; Tanaka, Kiyoshi; Kaku, Katsuo (Nippon Steel Corp.). Japan. JP 49010892 B4 19740313 Showa, 6 pp. (Japanese). CODEN: JAXXAD. APPLICATION: JP 1970-20897 19700313.

AB A low-temp. high-toughness steel with small thermal expansion coeff. contains C 0.01 - 0.50, Si 0.05 - 1.5, Mn 20.0 - 32.0, Cr 1.5 - 9.5, Ni 0.01 - 4.5, N 0.005 - 0.50%, with strengthening elements of .gtoreq.1 of Mo, W, and Co 0.05 - 3% and/or .gtoreq.1 of Nb, Ti, V, Al, and Cu 0.01 - 1.5%, and the rest Fe and incidental impurities. The steel is used for vessel for storing or transporting liquified gas at extremely low temp. such as -196.degree.. The austenitic title steel has a tensile strength >60 kg/mm2 and, in spite of Mn substitution for the expensive Ni, sufficient toughness at extremely low temp. and a thermal expansion coeff. much less than that of conventional austenitic steel such as 18 Cr - 8 Ni and considerably less than that of **ferritic stainless steel** or pure Fe (9 .times. 10⁻⁶/.degree.). The alloy is also used as structural steel and **welding** material.

IT 52941-60-3

(austenitic tough, with small thermal expansion for cryogenic liquified gas pressure vessels)

RN 52941-60-3 HCAPLUS

CN Iron alloy, base, Fe 36-78, Mn 20-32, Cr 1.5-9.5, Ni 0-4.5, Co 0-3, Mo 0-3, W 0-3, Al 0-1.5, Cu 0-1.5, Nb 0-1.5, Si 0-1.5, V 0-1.5, C 0-0.5, N 0-0.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Fe	36 - 78	7439-89-6
Mn	20 - 32	7439-96-5
Cr	1.5 - 9.5	7440-47-3

Ni	0	-	4.5	7440-02-0
Co	0	-	3	7440-48-4
Mo	0	-	3	7439-98-7
W	0	-	3	7440-33-7
Al	0	-	1.5	7429-90-5
Cu	0	-	1.5	7440-50-8
Nb	0	-	1.5	7440-03-1
Si	0	-	1.5	7440-21-3
V	0	-	1.5	7440-62-2
C	0	-	0.5	7440-44-0
N	0	-	0.5	17778-88-0

IC C22C

CC 55-3 (Ferrous Metals and Alloys)
Section cross-reference(s): 51

IT **52941-60-3**

(austenitic tough, with small thermal expansion for cryogenic
liquefied gas pressure vessels)